The Impact of Sport-Specific Imagery on Skill Acquisition and Performance

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Abstract

The research study aims to determine the impact of sport-specific imagery on skill acquisition and performance. Based on the primary data analysis for collecting the research data, this study used questions related to the independent and dependent variables. The sport-specific imagery is the main independent variable, and skill acquisition is a mediator between them. Performance is the main dependent variable for measuring the result. For this purpose, SPSS software generated informative results related to the variables. The result shows that descriptive statistics, pair correlation, variance ratio analysis, the regression analysis also present the graphical analysis between them. The overall research study found sport-specific imagery's direct and significant impact on skill acquisition and performance. The resulting study also found that skill acquisition plays a vital role in performance.

Keywords: Sport specific Imagery (SSI), Skill Acquisition (SA), Performance (PP)

Research Type: Research paper

Introduction

Sport-specific imagery is well-known, so psychological imagery or imagining remains a mental method that includes generating or restructuring intense psychological depictions of approaches, situations, and athletic movements (Lago, Casais, Dominguez, & Sampaio, 2010). Players utilize imagery to psychological models and practice their wanted performance consequences, improving their skills acquisition and whole performance in athletics. This rehearsal takes increased significant concentration within the area of athletic mindset, and then many papers must examine the consequences of sport-specific imagery on the performance of athletes. Imagery training is usually consumed among the best and seeking athletes within demand to recover performance (R. S. Lindsay, Larkin, Kittel, & Spittle, 2021). This is expected towards the quantity of advantages that could be increased since its usage. Imagery training could raise confidence, facilitate skills acquisition and maintenance, awareness, relieve pain, regulate arousal, enhance preparation strategies, and control emotions. Presently, imagery is consumed by the particular goal of progressing athletic performance. It is the best broadly trained mental ability consumed in athletics. For instance, Jowdy et al. originate that imagery methods remained consumed frequently through hundred percent of mentors, ninety percent of athletes, and ninety-four percent of trainers tried. Athletes, particularly the best athletes, use imagery widely and trust that it advantages performance. Imagery is usually trained with athletes within the teaching stages of athletic performance towards help by struggle. Though, it could too be consumed through the struggle stage. Athletes, particularly the best athletes, use imagery widely and trust that it advantages performance (Slimani, Chamari, Boudhiba, & Chéour, 2016).

The efficiency of sport-specific imagery allows for widely considered, and then numerous investigation results must emphasize their optimistic influence by numerous athletic performance features. A meta-analysis cited by researchers originates that imagery involvement considerably improved motivational outcomes, affective outcomes, and motorized performance in athletic (Malhotra, Ng, Chow, & Masters, 2022; Zhang, Wang, Shao, & Mi, 2020). The whole consequence of imagery involvements remained average by size, representing that psychological rehearsal across imagery could be main towards concrete developments in performance.

Imagery efforts starting with neural paths and intellectual procedures remain concerned throughout the definite natural performance of ability. When athletes involve in sport-specific imagery, they intensely imagine themselves performing the wanted actions, methods, and plans connected to their athletics (R Lindsay, Spittle, & Larkin, 2019). This procedure generates the beginning of a motorized circuit and mirrors neurons in mind, which are reliable for motor execution and planning.

Correspondingly, athletes could strengthen neural contacts related to particular abilities, which is important for better

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coordination, technique, and muscle memory. Imagery relief athletes grow a good grasp of the duty necessities and approaches included through psychologically imitating the actions and movements essential in athletics. Athletes could psychologically practice numerous situations by imitating, enabling them to react more effectively in decision-making processes throughout real game play (Simonsmeier, Andronie, Buecker, & Frank, 2021). Imagery could improve inspiration and loyalty stages. By imagining popular performances and optimistic consequences, athletes could increase their self-belief and raise their stimulus towards struggle aimed at quality. This optimistic attitude could participate in better skills acquisition and whole performance. Some of the important advantages of sport-specific imagery are its skill to improve skill acquisition. While athletes constantly integrate psychological imagery into their physical activity practices, athletes might speed up learning procedures by psychologically refining and practicing their abilities. Yet, athletes need to be substantially trained (Reid, Crespo, Lay, & Berry, 2007). By recurrently envisioning effective performances, athletes strengthen confident motorized models, develop confidence and improve a sturdy psychological illustration of anticipated activities. This psychological practice participates in the advancement of further involuntary and effective skill performance while athletes are played physically (Abreu, Duarte, Grande, Lima Neto, & Ottoni, 2020).

Furthermore, sport-specific imagery was discovered to optimistically affect athletes' mental states, inspiration, and confidence. Through imagery, athletes may psychologically practice situations that want psychological focus, toughness, and resilience, like controlling high-pressure conditions, overcoming problems, or keeping on peaceful in strong competition. By envisioning themselves positively directing such tasks, they may develop sturdier confidence in their capabilities, improve their efficacy and grow better psychological flexibility. This, in order, directs to enhanced performance consequences in court or field. Moreover, a combination of sport-specific imagery and physical rehearsal revealed to produce more noteworthy developments in the performance as related to bodily rehearsal only (McNitt-Gray et al., 2015). By incorporating psychological practice with bodily exercise, athletes may enhance their skills acquisition procedure. Imagery permits players to psychologically enhance their practice, forestall game situations, and direct efficiently, improving their decision-making capabilities and strategic alertness. Trainers perform a vital part in executing sport-specific imagery practices (Larriba et al., 2016). Trainers can direct players in utilizing imagery efficiently by giving strong directions, inspiring psychological practice, and easing negotiations on anticipated skill consequences. This is significant, noticing that the efficiency of sport-specific imagery is affected by many aspects like the strength of imagery, physical activity, and the ability of individuals to involve in psychological practice procedures (Ostojic et al., 2014) intensely. Those athletes who devote attentive and focused psychological attempts in imagery meetings are further expected to face optimistic results. In addition, consistency and regularity of sport-specific imagery rehearsal play a vital part in increasing its influence on skills performance and acquisition.

Therefore, sport-specific imagery is an important means for players exploring to improve their skills performance and acquisition. Through intense visualization and psychological practice, they may emphasize encouraging patterns, expand coordination and techniques, increase mental parameters like enthusiasm and assurance, and boost their executive abilities. While joined with physical rehearsal, sport-specific imagery may be the influential procedure for players determined to touch their complete aptitude in their particular athletic (Gould, Voelker, Damarjian, & Greenleaf, 2014).

Research Objective

The main objective of the current report is to influence sport-specific imagery on skills performance and acquisition to discover the efficiency of psychological imagery practices in improving athletes' abilities to attain novel proficiencies and enhance their complete presentation in athletics. Present study intentions to examine neural and cognitive procedures of basic sport-specific imagery and its impact on motorized learning, coordination, muscle reminiscence, decision-making, confidence, and many other mental aspects related to physical acts. By investigative impacts of psychological imagery in combination with bodily rehearsal, the aim is to give visions into applied uses and possible assistances of integrating sport-specific imagery in the exercise plans of athletes to enhance skills performance and acquisition results. This research study describes the Impact of Sport-Specific Imagery on Skill Acquisition and Performance. The first section describes the introduction related to sport-specific imagery and skill acquisition. This portion represents the objective of the research study. The second portion represents the literature review related to the dependent and independent variables. This portion presents the hypothesis development between independent and dependent variables. The third portion presents the research methodology, explains the tools and techniques, and describes the theoretical framework between them. The fourth section describes the result and descriptions, and the last section summarizes the overall research study and presents some recommendations about the topic.

Research question

The main research question is
What is the impact of sport-specific imagery on skill acquisition also that performance?
Athletes utilize sport-specific imagery, often mental rehearsal or visualization, to improve their performance in a certain sport. It entails imagining or showing the intended action or performance to increase many areas of sports performance, such as skill development, confidence, and attention.
Athletes should follow the following principles when using sport-specific imagery:
• Find a quiet, comfortable place to practice visualization.
• Use all of your senses to generate vivid mental images that include visual, aural, and tactile aspects.
• Practice regularly, preferably daily, to strengthen brain connections and enhance mental rehearsal abilities.
• Pay attention to the process (technique, motions) and the result (success, achievement).
• To maximize the effects of imaging, combine it with physical practice.
While sport-specific imagery might be useful for athletes, it is not a substitute for physical training and practice. It should be used as a supplement to physical preparation rather than as a replacement.

Literature review

Researchers explained that the mental training of athletes is necessary for performance improvement in sports. athletes' mental skills are polished by providing them with a mental training session for obtaining positive outcomes.in swimming, sports coaches provide mental and physical training to the swimmers to improve their swimming abilities. The psychologically based training provided to swimmers includes; cognitive, imagery-focusing, and competition-facing skills. All these skills make swimmers better in their sports (Roche, Tyleshevski, & Rogers, 1983).studies claim that virtual reality technology is a modern technology application used in athlete training sessions to make them win more sport-related competitions. Virtual reality allows athletes to learn more skills about their game and can provide them with game-related accuracy (Kaur, Kulshreshtha, Kaur, & Arriaza, 2022).studies claim that sports imagery technology-based training sessions allow athletes to cope with their sport-related challenges and level up their performance in sports-related areas. The self-criticism situation athletes undergo is reduced through the use of imaging technology. Using imagery-specific technology in the sports field provides athletes with psychology-based information about game tactics that help in potentially improving athletes' game-playing abilities (Korim & Strnádelová, 2023).studies show that psychological-based training provided to shooters athletes impacts their nervous system and guides them to focus on their target. During the sport-specific imaging, the psychological skills strengthen the athlete's autonomic nervous system response to tackle the game-related stress (Lee, Ryu, & Kim, 2023).studies show that mental imagery is regarded as a perfect sport-specific imagery tool for polishing athlete skills. the major advantage of the mental imagery technique is that it comes with the neural mechanisms that help Athelte in his skill acquisition process .nonlinear pedagogy model helps in predicting the improvement of the performance of athletes after skill acquisition through the imaginary mental technique (Torres-Unda et al., 2013).studies claim that to restore the movement abilities of athletes after an injury, they are provided training through imagery-specific technology that aids the rehabilitation process. motor imagery training is provided to injured or disabled athletes for muscle weakness improvement of athlete (Riki Lindsay, Spittle, & Spittle, 2023).studies explain that the motor imagery technique is used for providing information about various domains to athletes. These domains include environmental factors, times as well as emotion-related perspectives. The acquisition of knowledge about these domains improves athletes game-playing quality (Morone et al., 2022).studies claim that the competition between various video games has increased due to technological advancement. esports is a new sports playing technique that has become common due to the technological revolution. The sport psychology techniques are used for teaching athletes of esports about the strategies of playing competitive video games. The esports players playing various leagues related games are often provided with imagery-based interventions for improving their game-playing strategies (Munroe-Chandler, Loughead, Zuluev, & Ely, 2023).studies claim that to improve athletes' sports-related skills, they are provided with augmented feedback .augmented feedback helps athletes in the skill learning process (Petancevski, Inns, Fransen, & Impellizzeri, 2022).studies claim that in adolescent gymnastic players, it is critical to maintain their mental health. The maintenance of the gymnastic mental health optimizes their game-play and provides them with mental stability (Phrathep, Donohue, Renn, Mercer, & Allen, 2023b).studies explain that sports imagery, as well as sport-related anxiety faced by athletes, disturbs the athlete's playing abilities and ultimately disturbs his game performance, .but the extent of the impact of sport anxiety

and sports imagery on athlete performance varies. studies show that sports imagery influences athlete game performance positively, whereas sports anxiety negatively influences athlete game-playing abilities (Akbar et al., 2022).studies show that imagery is among the sports-based psychology skill often taught to athletes for motor-based performance enhancement of athlete. The youth athletes who lack game-playing skills are provided skills through imagery-based effective techniques (Armstrong, 2023).studies claim that imagery-based technique fosters the rehabilitation process as it involves the use of multi-script imagery intervention by sports psychologists. For coping with self-efficacy, athletes are provided with sports imagery training sessions. During the rehabilitation phase, most athletes prefer to choose the imagery-based healing psychology technique. the positive rise in the athlete's rehabilitation recovery phase builds his confidence for returning to the game after full recovery (Russo et al., 2021).studies show that athletes' superior sport performing ability contributes to the development of athlete behavior abilities. athletes are provided with such imagery-based training sessions. Athletes improve their behavioral functioning by helping them deal with game-related stress (Fang, Fang, Li, & Song, 2022). Studies elaborate that change in athlete skill acquisition ability over time improves his performance as an athlete. Moreover, The role of sport psychology-based imagery technique in enhancing dynamic athlete skills holds critical value (Hauw, Gesbert, & Crettaz von Roten, 2023).scholars predict that in the process of providing athletes with physical education, they are given physical exercise-based training. physical training and physical education polishes athletes' skills and makes them mentally and physically fit to play any sport. The mental imagery technique provides aid to the athlete in his physical training schedule (R. S. Lindsay et al., 2021).studies explain that optimization performance programs in sports help improve athletes' mental health.the anxiety and depression faced by black and white athletes are dealt with using performance optimization programs. The agoraphobia symptoms in athletes are overcome through the sport-based mental health intervention provided to athletes. (Phrathep, Donohue, Renn, Mercer, & Allen, 2023a) studies show that sport-related activities of athletes are improved through the use of the PETTLEP-based imagery approach (Roska, Mosovljevic, Purenović-Ivanović, & Popovic, 2023). This approach provides athletes with more learning experience and makes the process of sport-related skill acquisition easy for them athletes. For learning jumping skills, athletes are provided with a PETTLEP-based imaging technique that makes the process of learning jumping skills easy for female athletes. scholars predict that for improving the physical fitness-related activities of athletes, the use of trunk muscle training is common in sport training complexes.the TMT measures an athlete's physical fitness-related strength and determines the factors that cause a lack of sports performance ability in young athletes (Saeterbakken et al., 2022). Studies show that the Stroboscopic training technique involves the use of visual stimulation with visuomotor processing for improving athlete game-playing efficacy. The factor of reactive agility in volleyball athletes is influenced by the in situ training techniques (Zwierko, Jedziniak, Popowczak, & Rokita, 2023).Studies highlighted the importance of imagery interventions as athletes' psychology-enhancing skills. These imagery interventions provide athletes with psychological support for injury rehabilitation.in some athletes, enhanced motor functions are observed that are provided by imagery-based interventions during their injury rehabilitation duration. Providing physical training to athletes alone cannot help in polishing their skills .so, imagery intervention is provided along with physical training to the athletes recovering from traumatic injury (Simonsmeier et al., 2021).

Hypothesis development:

H1= *There are positive and significant relations between sport-specific and skill acquisition on performance.*
H2= *There are the negative impacts of sport-specific and skill acquisition on performance.*

Some crucial aspects to consider when it comes to skill acquisition and performance:

1. The process of acquiring skills: Skill acquisition normally occurs in phases, including the cognitive, associative, and autonomous stages. Learners concentrate on comprehending the skill and its needs at the cognitive stage. Practice and refining characterize the associative stage, with learners steadily increasing their performance. The ability becomes more automatic and requires less conscious effort in the autonomous stage.

Deliberate practice is a concentrated and disciplined method to skill learning that includes specified goals, feedback, repetition, and targeted progress. It is necessary for gaining skills in sports and other areas. Athletes may recognize shortcomings, concentrate on specific parts of their performance, and increase their total skill level via purposeful practice.

3. Transfer of learning: Transfer of learning influences skill acquisition by referring to the application of skills and information obtained in one setting to another. When talents learned in one sport or activity are beneficially applied to another, this is referred to as positive transfer.

Basketball talents, such as hand-eye coordination and agility, may transfer to sports such as volleyball or tennis.
4. Psychological variables: Psychological elements are important in skill acquisition and performance. Motivation, attention, self-confidence, and goal-setting all impact an athlete's ability to learn and perform efficiently. Mental skills training, which includes imagery, self-talk, and goal-setting approaches, can improve performance and accelerate skill development.
5. Contextual variables: Various contextual elements impact skill learning and performance, including the setting, coaching, and practice circumstances. A supportive and demanding training environment, competent coaching, and proper practice circumstances (e.g., variety, specificity, and realism) can all help to improve skill learning and transfer.
6. Feedback and reflection: Feedback is essential for skill development and performance enhancement. Athletes require precise and fast performance feedback to discover areas for improvement and make required modifications. Athletes can evaluate their performance, analyze their strengths and flaws, and create objectives for future progress via reflection and self-assessment.

Research Methodology

The research study measures the impact of sport-specific imagery on skill acquisition on performance. This research study is based on the primary research data analysis to determine the impact using specific questions related to them. This question depends upon open-ended and closed-ended questions related to independent and dependent variables. The sport-specific imagery is the main independent variable the skill acquisition on performance are both dependent variables.

Research tools, techniques, methods, and participation

Research based on the primary research data analysis for measuring the research study used SPSS software and generated informative results related to them. The SPSS software was used to determine the research study. The descriptive statistic, regression analysis, variance analysis, and one-way ANOVA test analysis also that present graphical analysis between them.

This study's methodology section details the participants, sample size, technique, and data-gathering methods employed. College-level players were randomly allocated to either a sport-specific imaging group or a control group for this study. The sample size was 40 people, 20 in each group. The technique entailed giving both groups pre-and post-tests and gathering data on their performance and skill gain. Video analysis and self-report measures were used to obtain data. The Movement Imagery Questionnaire and a sport-specific performance test were among the measurements and tools employed in this investigation. The overall goal of this study was to look at the impact of sport-specific images on athlete performance and skill development. The study's findings will give important insights into the use of visualization as a training strategy for athletes.

Result and Description

Table-1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
sport specific Imagery 1	50	1.00	3.00	1.4200	.57463
sport specific Imagery 2	50	1.00	4.00	1.4200	.64175
sport specific Imagery 3	50	1.00	3.00	1.3800	.56749
sport specific Imagery 4	50	1.00	3.00	1.4000	.53452
Skill acquisition 1	50	1.00	3.00	1.5000	.64681
skill acquisition 2	50	1.00	3.00	1.5000	.64681
skill acquisition 3	50	1.00	3.00	1.5400	.70595
skill acquisition 4	50	1.00	2.00	1.4200	.49857
performance 1	50	1.00	3.00	1.5800	.67279
performance 2	50	1.00	3.00	1.7200	.64015
performance 3	50	1.00	3.00	1.5400	.64555
Valid N (listwise)	50				

The above result demonstrated the descriptive statistic analysis result represents that mean values, minimum values, and maximum values also that present the standard deviation rates of each variable, including independent and dependent. The sport-specific imagery is the main independent variable. Its present mean value is 1.4200, and the standard deviation rate is 0.64, presenting that 64% deviates from the mean. The sport-specific imagery 3 and 4 consider sub-factors of independent variables. According to the result, the mean values are 1.3800 and 1.4000, and the standard deviation rates are 0.56749 and 0.5345, showing 56% and 53% deviation from the mean values. The result represents that the overall minimum value is 1.000 and the maximum value is 4.000, respectively. The total observation of each independent and dependent variable is 50. Skill acquisition is the main mediator variable. According to the result, its mean value is 1.5000, 1.5400, and 1.42000 showing that positive average value of the mean. The standard deviation rates of skill acquisition are 64%, 70%, and 49%, deviating from the mean. Performance is the main dependent variable. According to the analysis, its average values are 1.5800, 1.7200, and 1.54000, which present positive average values. The standard deviation

rates of each performance variable are 67% and 64%, respectively, showing a positive deviation from the mean.

Some significant elements and advantages of sports imagery:

1. Skill acquisition and improvement: Athletes can mentally practice and develop their technique by using images. They can improve their abilities and coordination by clearly envisioning themselves performing certain actions. This helps to strengthen brain pathways and increase muscle memory.
2. Building confidence: Visualisation enables athletes to generate positive mental situations in which they perform effectively. Athletes may enhance their confidence and self-belief by frequently visualizing good performances, which can substantially influence their actual performance.
3. Mental preparation: Visualisation assists athletes in psychologically preparing for competition. Athletes might be more prepared to handle real-life pressure and react to changing conditions during a game or event if they imagine numerous scenarios, including difficult situations and overcoming barriers.
4. Focus and concentration: Imagery can help athletes focus and keep attention throughout the competition. Athletes can learn to shut out distractions, stay in the present moment, and enhance their attentional control by mentally rehearsing their performance.
5. Emotional regulation: Emotional and arousal levels can be managed through sport-specific imagery. Athletes may mentally practice stress, anxiety, and pressure management tactics, helping them to remain calm and collected in high-pressure circumstances.
6. Strategy development: Imagery may be utilized to create and fine-tune gaming strategy. Athletes can visualize alternative plays, strategies, and scenarios during competition, allowing them to make rapid and effective judgments.

Table-2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	sport specific Imagery 1 & Skill Acquisition 1	50	.082	.570
Pair 2	sport specific Imagery 2 & skill acquisition 2	50	-.221	.123
Pair 3	sport specific Imagery 3 & Skill acquisition 3	50	-.217	.130
Pair 4	sport specific Imagery 4 & skill acquisition 4	50	-.184	.201
Pair 5	sport specific Imagery 4 & Performance 1	50	-.034	.814
Pair 6	Skill Acquisition 1 & Performance 2	50	-.049	.734

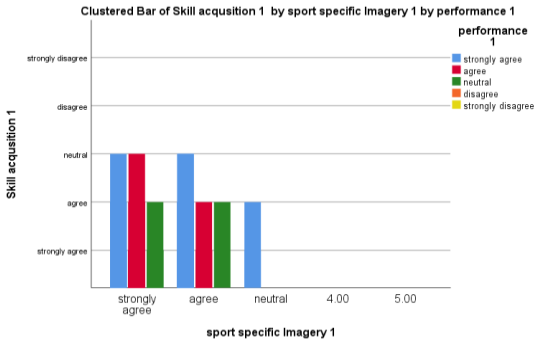
The above result represents that the correlation coefficient result describes pairs related to the variables the sport-specific imagery 1, and skill acquisition is the first pair its correlation value is 0.082, and significant value is 0.570, showing that positive and significant values between them. The second pair is sport-specific imagery 2, and skill acquisition is present at -0.221, and the significant rate is 0.123, showing that 12% significant level between them. Similarly, the third pair and fourth pair is sport specific imagery 3,4 and skill acquisitionTheir. Its correlation values are -0.217 and -0.184, respectively. The fifth pair is sport-specific imagery and performance. Its correlation value is -0.034, and its significant value is 0.814, respectively showing positive and significant values. The six pair consider between skill acquisition and performance correlation value is 0.049, and a significance level is 0.734, respectively, showing positive rates between them.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.105	19.138	19.138	2.105	19.138	19.138
2	2.012	18.293	37.430	2.012	18.293	37.430
3	1.242	11.295	48.725	1.242	11.295	48.725
4	1.165	10.592	59.317	1.165	10.592	59.317
5	.984	8.947	68.264			
6	.867	7.879	76.143			
7	.642	5.840	81.983			
8	.618	5.622	87.605			
9	.576	5.239	92.843			
10	.433	3.940	96.784			
11	.354	3.216	100.000			

Extraction Method: Principal Component Analysis.

The above result represents that the total Variance explained analysis result describes the initial eigenvalues, the cumulative percentage related to the initial eigenvalues. The result also explains the extraction sums of square values related to the cumulative percentage and variance percentage. The values of Variance are 19.138, 18.293, 11.295, 10.592, and 7.879, respectively, showing the positive variance values of each component. Similarly, the cumulative values are 37.430, 48.725, 68.264, and 81.983. All values describe the positive cumulative values between them.



The above graph represents a histogram analysis between skill acquisition and sport-specific imagery by performance. The vertical side shows that skill acquisition starts with strongly agree and ends with strongly disagree. The blue bar line presents the strongly agree factor between dependent and independent variables. The red line represents that agreement; the green line shows neutral values between sport-specific imagery and performance.

Quantile Regression:

Model Quality (q=0.5)[a,b,c,d]	
Pseudo R Squared	.235
Mean Absolute Error (MAE)	.4274

a. Dependent Variable: skill acquisition 2
b. Model: (Intercept), performance 1, performance 2, performance 3, sport-specific Imagery 1, sport-specific Imagery 2, sport-specific Imagery 3, sport-specific Imagery 4
c. Regression Weight Variable: skill acquisition 3
d. Method: Simplex algorithm

The above result describes that the quantile regression analysis result presents that the model quality value of R square is 0.235, showing a 23% model fit for analysis. The mean absolute error value is 0.4274, showing a 42% deviation from the mean. The result presents 0.5 model quality between dependent and independent indicators.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.790	.712		3.917	.000
	sport specific Imagery 1	-.245	.178	-.209	-1.375	.177
	sport specific Imagery 2	.031	.162	.030	.193	.848
	sport specific Imagery 3	-.122	.200	-.103	-.611	.0545
	sport specific Imagery 4	-.150	.200	-.119	-.751	.0457
	Skill acquisition 1	-.105	.169	-.101	-.621	.0538
	skill acquisition 2	-.218	.171	-.209	-1.274	.0210
	skill acquisition 3	.102	.161	.107	.634	.0530
	skill acquisition 4	-.142	.242	-.105	-.585	.0562

a. Dependent Variable: performance 1

The above result describes that coefficient linear regression analysis result represents beta values, and standard error values, also that t statistic analysis also that significant values of each variable, including independent variables. Performance is considered the dependent variable. The sport-specific imagery 1,2,3, and 4 is the main independent variable. Its beta value is -0.245; its standard error value is 0.178, the t-statistic value is -1.375, and its significant value is 0.177, showing 17% significant values between sport-specific imagery and performance. The other independent variables show t-statistic values are -0.611 and -0.751, respectively. The significant values of sport-specific imagery are 0.05 and 0.04, showing that 5% and 4% have significant levels between them. The skill acquisition main mediator variable shows that beta values are -0.218, 0.102, and -0.142, and the t statistic values are -1.274, 0.634, and -0.585, showing that positive and negative relationship with performance significant value is 0.210, 0.053, 0.056 shows that 2%, 5% significant analysis between them.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.409	8	.426	.931	.502[b]
	Residual	18.771	41	.458		
	Total	22.180	49			

a. Dependent Variable: performance 1
b. Predictors: (Constant), skill acquisition 4, skill acquisition 2, sport-specific Imagery 1, sport-specific Imagery 4, sport-specific Imagery 2, Skill acquisition 1, sport-specific Imagery 3, skill acquisition 3

The above result describes that the ANOVA test analysis result presents the sum of square values, mean square values, also that F statistic values, also that significant values of regression, and residual values. The sum of the

square value of regression and residual rate are 3.409 and 18.771, also 22.180, respectively. The mean square values are 0.426 and 0.458, showing 42% and 45% average square values. The F statistic value is 0.931 shows a positive rate, and a significant value is 0.052 shows that 5% significant relation of a linear regression model.

Conclusion

Finally, sport-specific imagery significantly influences athletic skill development and performance. It is an effective mental training technique for improving cognitive processes, facilitating skill learning, improving performance, regulating emotions, assisting in injury recovery, and transferring skills to actual competition. The study showed many crucial discoveries that might have significant ramifications for coaches and athletes. In the context of sports and other activities, skill learning and performance are inextricably linked. The process of acquiring and developing certain abilities required to accomplish activities or actions efficiently is called skill acquisition. The execution and exhibition of those gained abilities in a certain situation, such as a game, competition, or performance, is called performance. It's crucial to remember that skill development is an ongoing process, and performance is a dynamic outcome impacted by various circumstances. To improve skill acquisition and optimize performance in their chosen sport or activity, athletes should participate in purposeful practice, seek feedback, focus on mental skill development, and establish a perfect setting for learning. One of the most important discoveries was a high association between an athlete's degree of motivation and their performance. Athletes who were extremely driven outperformed those who were unmotivated. This research study accept the all alternative hypothesis and reject the null hypothesis between them. the overall research concluded that there are direct and significant relation in between sport specific on skill acquisition and performance. This recommends that coaches should concentrate on establishing ways to increase players' motivation levels, such as goal setting and positive feedback. Another notable discovery was that athletes who got individualized instruction performed significantly better than those who received group coaching. Individualized coaching was more successful in boosting performance since it allowed instructors to adjust their approach to each athlete's specific strengths and deficiencies. Overall, our findings emphasize the significance of personalized coaching and motivation in improving athletic performance. Athletes may improve their technique, increase confidence, focus, and efficiently regulate emotions by mentally rehearsing sport-specific actions and circumstances. However, it is crucial to emphasize that constant practice and integrating images with physical exercise are critical for the best outcomes. Seeking advice from a sports psychologist or mental skills coach can improve the efficacy of sport-specific images even further. Overall, including mental rehearsal through sport-specific images in an athlete's training program may complement their overall success and performance in sports.

References

Abreu, B. F., Duarte, M. L., Grande, M. G., Lima Neto, N. M., & Ottoni, E. F. (2020). Eosinophilic granuloma: an unusual finding in adults. *Jornal Brasileiro de Patologia e Medicina Laboratorial, 56*. doi:https://doi.org/10.5935/1676-2444.20200025

Akbar, M., Akhtar, M., Riaz, M. A., Adeel, I., Batool, K., & Waqar, S. (2022). Impact of Sports Anxiety and Sports Imagery on Performance among Athletes. *Journal of Education and Social Studies, 3*(2), 137-142. doi:https://doi.org/10.52223/jess.20223209

Armstrong, D.-M. (2023). A systematic review utilising Synthesis without Meta-Analysis (SWiM) to explore the use of imagery interventions in youth sport. *Journal of Imagery Research in Sport and Physical Activity, 18*(1), 20230008. doi:https://doi.org/10.1515/jirspa-2023-0008

Fang, Q., Fang, C., Li, L., & Song, Y. (2022). Impact of sport training on adaptations in neural functioning and behavioral performance: A scoping review with meta-analysis on EEG research. *Journal of Exercise Science & Fitness*. doi:https://doi.org/10.1016/j.jesf.2022.04.001

Gould, D., Voelker, D. K., Damarjian, N., & Greenleaf, C. (2014). Imagery training for peak performance. doi:https://doi.org/10.1037/14251-004

Hauw, D., Gesbert, V., & Crettaz von Roten, F. (2023). Exploring Dynamics of Changes in Psychological Skills in the Development of Talented Athletes. *Perceptual and Motor Skills*, 00315125231165163. doi:https://doi.org/10.1177/00315125231165163

Kaur, H., Kulshreshtha, A., Kaur, R., & Arriaza, P. S. (2022). APPLICATION OF VIRTUAL REALITY TECHNOLOGY-BASED TRAINING AND SKILL ACQUISITION IN VARIOUS SPORTS: A SYSTEMATIC REVIEW. *NeuroQuantology, 20*(19), 1809-1817. doi:https://doi.org/10.48047/nq.2022.20.19.NQ99158

Korim, V., & Strnádelová, B. (2023). The effect of imagery on performance and level of self-criticism of athletes. *Journal of Imagery Research in Sport and Physical Activity, 18*(1), 20220017. doi:https://doi.org/10.1515/jirspa-2022-0017

Lago, C., Casais, L., Dominguez, E., & Sampaio, J. (2010). The effects of situational variables on distance covered at various speeds in elite soccer. *European journal of sport science, 10*(2), 103-109. doi:https://doi.org/10.1080/17461390903273994

Larriba, F., Raya, C., Angulo, C., Albo-Canals, J., Díaz, M., & Boldú, R. (2016). Externalising moods and psychological states in a cloud based system to enhance a pet-robot and child's interaction. *BioMedical Engineering OnLine, 15*(1), 187-196. doi:https://doi.org/10.1186/s12938-016-0180-3

Lee, G., Ryu, J., & Kim, T. (2023). Psychological skills training impacts autonomic nervous system responses to stress during sport-specific imagery: An exploratory study in junior elite shooters. *Frontiers in Psychology, 14*, 1047472. doi:https://doi.org/10.3389/fpsyg.2023.1047472

Lindsay, R., Spittle, M., & Larkin, P. (2019). The effect of mental imagery on skill performance in sport: A systematic review. *Journal of Science and Medicine in Sport, 22*, S92. doi:https://doi.org/10.1016/j.jsams.2019.08.111

Lindsay, R., Spittle, S., & Spittle, M. (2023). Considering the need for movement variability in motor imagery training: implications for sport and rehabilitation. *Frontiers in Psychology, 14*, 1178632. doi:https://doi.org/10.3389/fpsyg.2023.1178632

Lindsay, R. S., Larkin, P., Kittel, A., & Spittle, M. (2021). Mental imagery training programs for developing sport-specific motor skills: a systematic review and meta-analysis. *Physical Education and Sport Pedagogy*, 1-22. doi:https://doi.org/10.1080/17408989.2021.1991297

Malhotra, N., Ng, J. L., Chow, J. Y., & Masters, R. S. (2022). Developing a skill acquisition framework for youth sport in Singapore. *Asian Journal of Sport and Exercise Psychology, 2*(1), 35-43. doi:https://doi.org/10.1016/j.ajsep.2022.04.002

McNitt-Gray, J. L., Sand, K., Ramos, C., Peterson, T., Held, L., & Brown, K. (2015). Using technology and engineering to facilitate skill acquisition and improvements in performance. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of sports engineering and technology, 229*(2), 103-115. doi:https://doi.org/10.1177/1754337114565381

Morone, G., Ghanbari Ghooshchy, S., Pulcini, C., Spangu, E., Zoccolotti, P., Martelli, M., . . . Paolucci, S. (2022). Motor Imagery and Sport Performance: A Systematic Review on the PETTLEP Model. *Applied Sciences, 12*(19), 9753. doi:https://doi.org/10.3390/app12199753

Munroe-Chandler, K. J., Loughead, T. M., Zuluev, E. G., & Ely, F. O. (2023). An imagery-based intervention for managing anxiety in esports. *Journal of Imagery Research in Sport and Physical Activity, 18*(s1), 20230005. doi:https://doi.org/10.1515/jirspa-2023-0005

Ostojic, S. M., Castagna, C., Calleja-González, J., Jukic, I., Idrizovic, K., & Stojanovic, M. (2014). The biological age of 14-year-old boys and success in adult soccer: do early maturers predominate in the top-level game? *Research in Sports Medicine, 22*(4), 398-407. doi:https://doi.org/10.1080/15438627.2014.944303

Petancevski, E. L., Inns, J., Fransen, J., & Impellizzeri, F. M. (2022). The effect of augmented feedback on the performance and learning of gross motor and sport-specific skills: A systematic review. *Psychology of sport and exercise*, 102277. doi:https://doi.org/10.1016/j.psychsport.2022.102277

Phrathep, D., Donohue, B., Renn, B. N., Mercer, J., & Allen, D. N. (2023a). Controlled evaluation of a sport-specific performance optimization program in a biracial black and white athlete diagnosed with social anxiety disorder and agoraphobia. *Clinical Case Studies, 22*(3), 267-284. doi:https://doi.org/10.1177/15346501221117827

Phrathep, D., Donohue, B., Renn, B. N., Mercer, J., & Allen, D. N. (2023b). Sport and mental health performance optimization in an adolescent gymnast: A case evaluation. *Frontiers in sports and active living, 5*, 1018861. doi:https://doi.org/10.3389/fspor.2023.1018861

Reid, M., Crespo, M., Lay, B., & Berry, J. (2007). Skill acquisition in tennis: Research and current practice. *Journal of Science and Medicine in Sport, 10*(1), 1-10. doi:https://doi.org/10.1016/j.jsams.2006.05.011

Roche, A. F., Tyleshevski, F., & Rogers, E. (1983). Non-invasive measurements of physical maturity in children. *Research quarterly for exercise and sport, 54*(4), 364-371. doi:https://doi.org/10.1080/02701367.1983.10605321

Roska, N. G., Mosovljevic, L., Purenović-Ivanović, T., & Popovic, B. (2023). THE PETTLEP METHOD AS A VALID LEARNING METHOD FOR IMPROVING THE JUMP TECHNIQUE OF YOUNG FEMALE RHYTHMIC GYMNASTS. *Facta Universitatis, Series: Physical Education and Sport*, 015-028. doi:https://doi.org/10.22190/FUPES221123003R

Russo, F., Calabrò, T., Iiritano, G., Pellicanò, D. S., Petrungaro, G., & Trecozzi, M. R. (2021). Green and safety school regional program to sustainable development using limited traffic zone. *International Journal of Sustainable Development and Planning, 16*(1), 71-79. doi:https://doi.org/10.18280/ijsdp.160107

Saeterbakken, A. H., Stien, N., Andersen, V., Scott, S., Cumming, K. T., Behm, D. G., . . . Prieske, O. (2022). The effects of trunk muscle training on physical fitness and sport-specific performance in young and adult athletes: a systematic review and meta-analysis. *Sports Medicine, 52*(7), 1599-1622. doi:https://doi.org/10.1007/s40279-021-01637-0

Simonsmeier, B. A., Andronie, M., Buecker, S., & Frank, C. (2021). The effects of imagery interventions in sports: A meta-analysis. *International Review of Sport and Exercise Psychology, 14*(1), 186-207. doi:https://doi.org/10.1080/1750984X.2020.1780627

Slimani, M., Chamari, K., Boudhiba, D., & Chéour, F. (2016). Mediator and moderator variables of imagery use-motor learning and sport performance relationships: a narrative review. *Sport Sciences for Health, 12*, 1-9. doi:https://doi.org/10.1007/s11332-016-0265-1

Torres-Unda, J., Zarrazquin, I., Gil, J., Ruiz, F., Irazusta, A., Kortajarena, M., . . . Irazusta, J. (2013). Anthropometric, physiological and maturational characteristics in selected elite and non-elite male adolescent basketball players. *Journal of Sports Sciences, 31*(2), 196-203. doi:https://doi.org/10.1080/02640414.2012.725133

Zhang, J., Wang, F., Shao, C., & Mi, X. (2020). Structural equation modelling of household long-distance flexible travel behavior. *International Journal of Sustainable Development and Planning, 15*(4), 461-467. doi:https://doi.org/10.18280/ijsdp.150406

Zwierko, M., Jedziniak, W., Popowczak, M., & Rokita, A. (2023). Effects of in-situ stroboscopic training on visual, visuomotor and reactive agility in youth volleyball players. *PeerJ, 11*, e15213. doi:https://doi.org/10.7717/peerj.15213/supp-1