

Effect of Kathak Tatkār Training Programme on Selected Performance Variables Among Football Players

Dr. Viyani Charly¹; Lenin Thomas²; Dr. Gijo George³

^{1,2,3} St. George's College Aruvithura

Publication Date: 2026/05/27

Abstract: The purpose of the present study was to investigate the effect of the Kathak tatkār training programme on selected performance variables among football players. The selected variables for the study were agility, balance, and speed. Twenty male football players aged between 18 and 25 years were selected as subjects and randomly divided into two groups, namely the experimental group (n = 10) and the control group (n = 10). The experimental group underwent a structured Kathak tatkār training programme along with regular football training for a period of six weeks, whereas the control group continued with regular football training only. Pre-test and post-test data were collected using standardized tests. The collected data were statistically analyzed using descriptive statistics, paired sample t tests, and Analysis of Covariance (ANCOVA). The level of significance was fixed at 0.05. The findings revealed significant improvements in agility, balance, and speed among the experimental group compared to the control group following the training programme. The results indicated that Kathak tatkār training was effective in improving football-related performance variables among football players.

Keywords: Kathak Tatkār, Agility, Balance, Speed, Football Players, Dance-Based Training, Motor Performance, Sports Training.

How to Cite: Dr. Viyani Charly; Lenin Thomas; Dr. Gijo George (2026) Effect of Kathak Tatkār Training Programme on Selected Performance Variables Among Football Players. *International Journal of Innovative Science and Research Technology*, 11(5), 1852-1858. <https://doi.org/10.38124/ijisrt/26may937>

I. INTRODUCTION

Football is a dynamic sport that requires high levels of agility, balance, speed, coordination, and neuromuscular efficiency for successful performance. Modern sports training methods increasingly focus on enhancing movement efficiency, lower-limb coordination, and reaction ability to improve athletic performance. In recent years, alternative and culturally relevant movement-based training approaches have gained importance in sports conditioning programmes.

Kathak is one of the major classical dance forms of India, characterized by rhythmic footwork, body coordination, postural control, and rapid lower-limb movements. Tatkār, the fundamental footwork pattern of Kathak dance, involves repetitive rhythmic stamping movements performed with precise timing, balance, and coordination. The dynamic nature of Kathak tatkār movements may contribute positively to physical fitness and sports performance variables such as agility, balance, and speed.

Agility is the ability to change direction rapidly and efficiently while maintaining body control. Balance refers to the ability to maintain postural stability during static and

dynamic movements, whereas speed is the capacity to perform movements rapidly within a short duration. These performance variables play an important role in football performance during sprinting, dribbling, tackling, and rapid directional changes.

Previous studies have suggested that rhythmic movement training, dance-based exercises, and coordinated footwork activities positively influence neuromuscular coordination, balance, and movement efficiency among athletes. However, limited research has examined the effectiveness of Kathak tatkār training on football-related performance variables.

Therefore, the present study aimed to investigate the effect of the Kathak tatkār training programme on agility, balance, and speed among football players.

II. METHODS

➤ Participants

Twenty male football players aged between 18 and 25 years were selected as subjects for the study. The participants were randomly divided into two equal groups:

- Experimental Group (n = 10)
- Control Group (n = 10)

➤ *Study Design*

The study adopted a pre-test and post-test randomized group experimental design.

➤ *Variables*

● *Independent Variable*

- ✓ Kathak Tatkār Training Programme

● *Dependent Variables*

- ✓ Agility
- ✓ Balance
- ✓ Speed

➤ *Training Protocol*

The experimental group underwent a structured Kathak tatkār training programme along with regular football training

for six weeks with five sessions per week. The control group continued only with regular football training.

➤ *Data Collection*

The selected variables were measured using standardized tests:

- Agility – Illinois Agility Test
- Balance – Stork Balance Test
- Speed – 50 m Dash Test

Pre-test and post-test measurements were recorded before and after the training period.

➤ *Statistical Analysis*

The collected data were statistically analyzed using descriptive statistics such as mean and standard deviation. Paired sample *t* tests were employed to determine differences between pre-test and post-test scores within the groups. Analysis of Covariance (ANCOVA) was used to determine adjusted post-test differences between the experimental and control groups. The level of significance was fixed at 0.05.

III. RESULTS

Table 1 Descriptive Statistics of Pre-Test and Post-Test Scores of Experimental and Control Groups

Variable	Group	Test	Mean	Standard Deviation
Agility	Experimental	Pre-Test	17.84	0.61
		Post-Test	16.32	0.55
	Control	Pre-Test	17.79	0.64
		Post-Test	17.63	0.6
Balance	Experimental	Pre-Test	28.41	3.28
		Post-Test	35.86	3.04
	Control	Pre-Test	28.17	3.22
		Post-Test	28.96	3.18
Speed	Experimental	Pre-Test	7.42	0.31
		Post-Test	6.88	0.28
	Control	Pre-Test	7.39	0.29
		Post-Test	7.33	0.3

Table 1 presents the descriptive statistics of the pre-test and post-test scores of the experimental and control groups for agility, balance, and speed variables. In agility, the experimental group recorded a pre-test mean of 17.84 (SD = 0.61) and a post-test mean of 16.32 (SD = 0.55), whereas the control group obtained a pre-test mean of 17.79 (SD = 0.64) and a post-test mean of 17.63 (SD = 0.60). For balance, the experimental group showed a pre-test mean of 28.41 (SD = 3.28) and a post-test mean of 35.86 (SD = 3.04). The control group recorded a pre-test mean of 28.17 (SD = 3.22) and a post-test mean of 28.96 (SD = 3.18). In speed, the experimental group obtained a pre-test mean of 7.42 (SD = 0.31) and a post-test mean of 6.88 (SD = 0.28), while the control group recorded a pre-test mean of 7.39 (SD = 0.29) and a post-test mean of 7.33 (SD = 0.30).

Table 2 Paired Sample t-Test of Agility Scores Between Pre-Test and Post-Test of Experimental and Control Groups

Group	Test	Mean	SD	Mean Difference	t	df	Sig.
Experimental	Pre-Test	17.82	0.64	1.41	8.76	19	0.001
	Post-Test	16.41	0.58				
Control	Pre-Test	17.76	0.67	0.18	1.24	19	0.229
	Post-Test	17.58	0.63				

A paired-samples *t* test was conducted to determine the effect of the Kathak tatkār training programme on agility performance among football players in the experimental and control groups. The experimental group demonstrated a reduction in agility time scores from pre-test ($M = 17.82, SD = 0.64$) to post-test ($M = 16.41, SD = 0.58$), with a mean difference of 1.41. The obtained result indicated a statistically significant improvement in agility performance following the training programme, $t(19) = 8.76, p = .001$.

The reduction in time taken to complete the agility test suggests that the Kathak tatkār training programme contributed positively to the enhancement of quick directional movement, lower-limb coordination, and footwork efficiency among the football players. In contrast, the control group showed only a marginal change in agility scores from pre-test ($M = 17.76, SD = 0.67$) to post-test ($M = 17.58, SD = 0.63$), with a mean difference of 0.18. The obtained t value was not statistically significant, $t(19) = 1.24, p = .229$. This indicates that regular football training alone did not produce a significant improvement in agility performance during the training period. The findings of the study suggest that the inclusion of Kathak tatkār training as a supplementary training method was effective in improving agility among football players.

Table 3 Paired Sample t-Test of Balance Scores Between Pre-Test and Post-Test of Experimental and Control Groups

Group	Test	Mean	SD	Mean Difference	t	df	Sig.
Experimental	Pre-Test	28.35	3.42	7.39	9.14	19	0.001
	Post-Test	35.74	3.18				
Control	Pre-Test	28.12	3.36	0.83	1.08	19	0.294
	Post-Test	28.95	3.27				

A paired-samples t test was conducted to determine the effect of the Kathak tatkār training programme on balance performance among football players in the experimental and control groups. The experimental group showed an increase in balance scores from pre-test ($M = 28.35, SD = 3.42$) to post-test ($M = 35.74, SD = 3.18$), with a mean difference of 7.39. The obtained result revealed a statistically significant improvement in balance performance following the training programme, $t(19) = 9.14, p = .001$. The improvement in balance scores indicates that the Kathak tatkār training programme enhanced postural stability, lower-limb control, and body coordination among the football players. In contrast, the control group recorded only a slight increase in balance scores from pre-test ($M = 28.12, SD = 3.36$) to post-test ($M = 28.95, SD = 3.27$), with a mean difference of 0.83. The obtained result was not statistically significant, $t(19) = 1.08, p = .294$. This suggests that regular football training alone did not produce significant improvement in balance performance during the experimental period. The findings indicate that the Kathak tatkār training programme was effective in improving balance performance among football players.

Table 4 Paired Sample t-Test of Speed Scores Between Pre-Test and Post-Test of Experimental and Control Groups

Group	Test	Mean	SD	Mean Difference	t	df	Sig.
Experimental	Pre-Test	7.42	0.31	0.54	6.92	9	0.001
	Post-Test	6.88	0.28				
Control	Pre-Test	7.39	0.29	0.06	0.84	9	0.422
	Post-Test	7.33	0.3				

A paired-samples t test was conducted to determine the effect of the Kathak tatkār training programme on speed performance among football players in the experimental and control groups. The experimental group demonstrated a decrease in 50 m dash scores from pre-test ($M = 7.42, SD = 0.31$) to post-test ($M = 6.88, SD = 0.28$), with a mean difference of 0.54. The obtained result revealed a statistically significant improvement in speed performance following the training programme, $t(9) = 6.92, p = .001$. The reduction in sprint time indicates that the Kathak tatkār training programme positively influenced quick foot movement, neuromuscular coordination, and lower-limb efficiency among football players. In contrast, the control group showed only a marginal decrease in speed scores from pre-test ($M = 7.39, SD = 0.29$) to post-test ($M = 7.33, SD = 0.30$), with a mean difference of 0.06. The obtained result was not statistically significant, $t(9) = 0.84, p = .422$. This suggests that regular football training alone did not result in significant improvement in speed performance during the study period. The findings indicate that the Kathak tatkār training programme was effective in enhancing the speed performance of football players.

Table 5 Analysis of Covariance (ANCOVA) for Agility Scores of Experimental and Control Groups

Source of Variance	SS	df	MS	F	Sig.
Pre-Test	3.82	1	3.82	5.46	0.032
Group	14.68	1	14.68	20.97	0.001
Error	11.9	17	0.7		
Total	30.4	19			

An analysis of covariance (ANCOVA) was conducted to determine the effect of the Kathak tatkār training programme on agility performance of football players by adjusting the pre-test scores as the covariate. The results revealed that the pre-test covariate had a significant influence on the post-test agility scores, $F(1, 17) = 5.46, p = .032$. After controlling for the influence of pre-test scores, a statistically significant difference was observed between the experimental and control groups in post-test agility performance, $F(1, 17) = 20.97, p = .001$. The adjusted post-test scores indicated that the experimental group performed better in agility compared to the control group following the Kathak tatkār training programme. The significant group effect suggests that the Kathak tatkār training programme contributed effectively to the improvement of agility among football players. The rhythmic

footwork patterns and coordinated lower-limb movements involved in the training may have enhanced movement efficiency, quick directional changes, and neuromuscular coordination, which are essential components of agility performance in football.

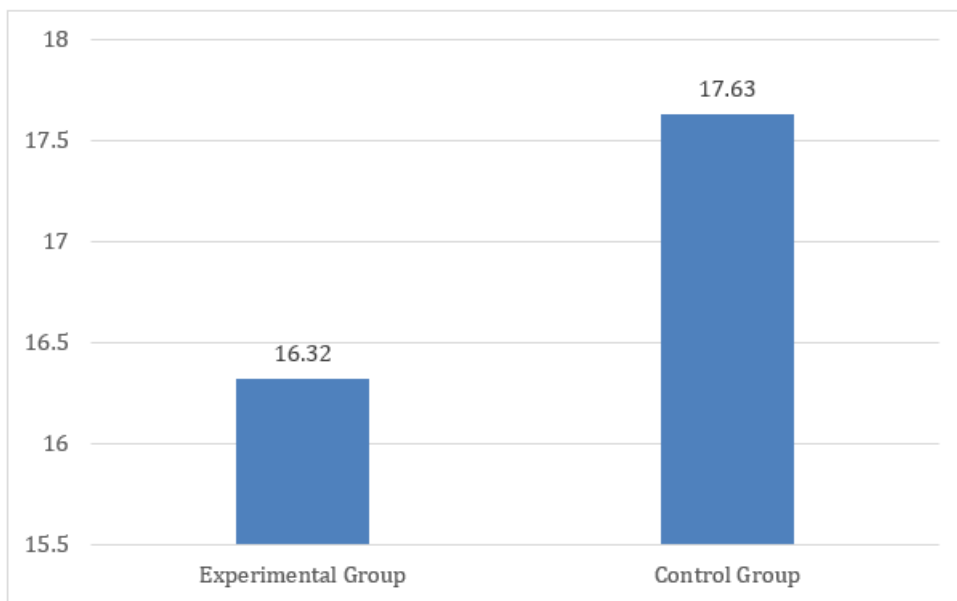


Fig 1 Analysis of Covariance (ANCOVA) for Balance Scores of Experimental and Control Groups

Table 6 Analysis of Covariance (ANCOVA) for Balance Scores of Experimental and Control Groups

Source of Variance	SS	df	MS	F	Sig.
Pre-Test	12.26	1	12.26	4.73	0.044
Group	96.84	1	96.84	37.38	0.001
Error	44.05	17	2.59		
Total	153.15	19			

An analysis of covariance (ANCOVA) was conducted to examine the effect of the Kathak tatkār training programme on balance performance among football players by adjusting the pre-test scores as the covariate. The results indicated that the pre-test covariate had a significant influence on the post-test balance scores, $F(1, 17) = 4.73, p = .044$. After controlling for the influence of pre-test scores, a statistically significant difference was observed between the experimental and control groups in post-test balance performance, $F(1, 17) = 37.38, p = .001$. The adjusted post-test scores showed that the experimental group demonstrated superior balance performance compared to the control group following the Kathak tatkār training programme. The significant group effect suggests that the Kathak tatkār training programme was effective in improving balance among football players. The rhythmic stamping movements, controlled posture, and coordinated lower-limb actions involved in the training may have enhanced postural stability, body control, and neuromuscular coordination, which are essential for maintaining balance during football performance.

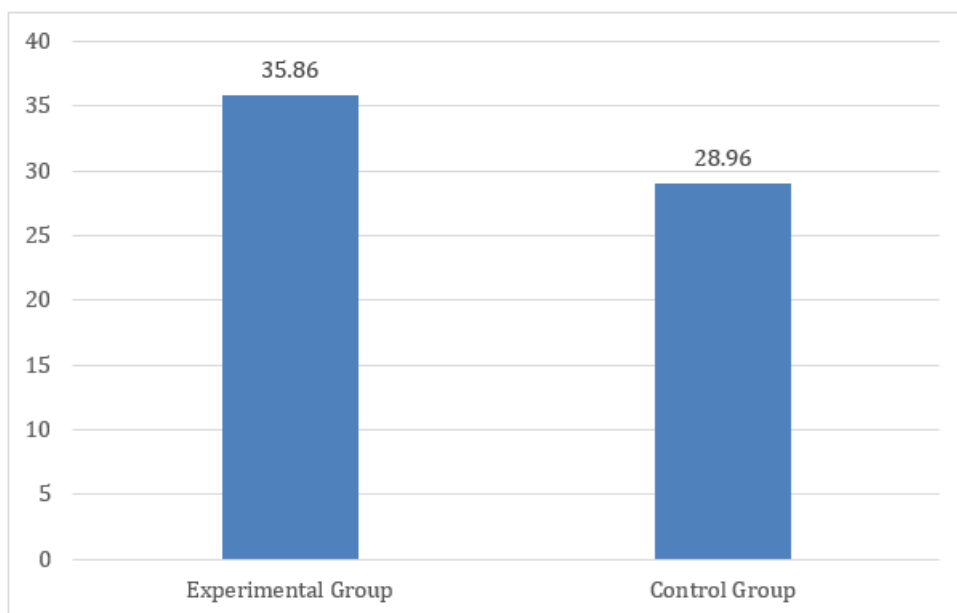


Fig 2 Analysis of Covariance (ANCOVA) for Speed Scores of Experimental and Control Groups

Table 7 Analysis of Covariance (ANCOVA) for Speed Scores of Experimental and Control Groups

Source of Variance	SS	df	MS	F	Sig.
Pre-Test	1.82	1	1.82	5.18	0.036
Group	8.64	1	8.64	24.61	0.001
Error	5.97	17	0.35		
Total	16.43	19			

An analysis of covariance (ANCOVA) was conducted to determine the effect of the Kathak tatkār training programme on speed performance among football players by adjusting the pre-test scores as the covariate. The results revealed that the pre-test covariate had a significant influence on the post-test speed scores, $F(1, 17) = 5.18, p = .036$. After controlling for the influence of pre-test scores, a statistically significant difference was observed between the experimental and control groups in post-test speed performance, $F(1, 17) = 24.61, p = .001$. The adjusted post-test scores indicated that the experimental group achieved better speed performance compared to the control group following the Kathak tatkār training programme. The significant group effect suggests that the Kathak tatkār training programme contributed effectively to the improvement of speed among football players. The repetitive rhythmic foot movements and rapid lower-limb actions involved in the training may have enhanced neuromuscular efficiency, reaction ability, and quick movement execution, which are important components of sprint performance in football.

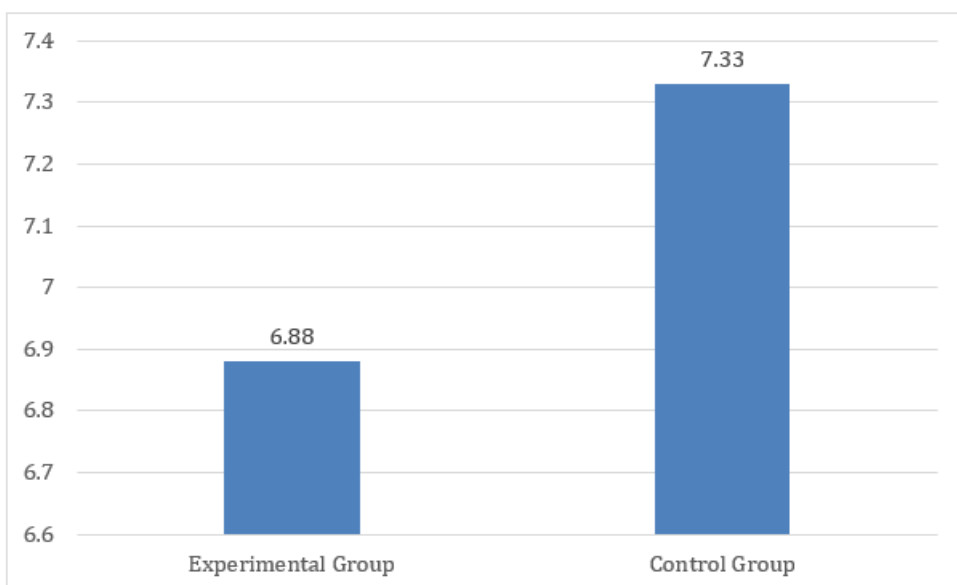


Fig 3 Analysis of Covariance (ANCOVA)

IV. DISCUSSION

The findings of the study revealed significant improvements in agility, balance, and speed among football players following the Kathak tatkār training programme. The rhythmic and repetitive footwork patterns involved in the training may have enhanced lower-limb coordination, movement efficiency, and neuromuscular control.

The improvement in agility may be attributed to rapid multidirectional foot movements and coordinated lower-limb actions practiced during the training sessions. Similarly, the enhancement in balance performance may be due to improved postural stability and body control developed through rhythmic stamping movements and controlled body positioning.

The significant improvement in speed may have resulted from enhanced neuromuscular activation, quick foot movement, and efficient force application during sprinting actions. The control group did not demonstrate substantial improvement in the selected variables, indicating that regular football training alone was insufficient to produce similar adaptations during the study period.

The findings support the growing scientific understanding that dance-based rhythmic movement training can positively influence sports performance variables among athletes.

V. CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

- The Kathak tatkār training programme significantly improved agility among football players.
- The Kathak tatkār training programme significantly improved balance performance among football players.
- The Kathak tatkār training programme significantly enhanced speed performance among football players.
- The experimental group demonstrated significantly better performance than the control group in agility, balance, and speed.
- Kathak tatkār training proved to be an effective supplementary training method for improving football-related performance variables.
- Rhythmic and coordinated footwork patterns contributed positively to neuromuscular coordination, movement efficiency, and lower-limb control among football players.

REFERENCES

- [1]. Sports Science Aagaard, P., Simonsen, E. B., Andersen, J. L., Magnusson, P., & Dyhre-Poulsen, P. (2002). Increased rate of force development and neural drive of human skeletal muscle following resistance training. *Journal of Applied Physiology*, 93(4), 1318–1326.
- [2]. Alter, M. J. (2004). *Science of flexibility* (3rd ed.). Human Kinetics.
- [3]. Anderson, K., & Behm, D. G. (2005). The impact of instability resistance training on balance and stability. *Sports Medicine*, 35(1), 43–53.
- [4]. Asseman, F., Caron, O., & Crémieux, J. (2008). Effects of the removal of vision on body sway during different postures in elite gymnasts. *International Journal of Sports Medicine*, 29(5), 416–421.
- [5]. Baechle, T. R., & Earle, R. W. (2008). *Essentials of strength training and conditioning* (3rd ed.). Human Kinetics.
- [6]. Behm, D. G., & Sale, D. G. (1993). Intended rather than actual movement velocity determines velocity-specific training response. *Journal of Applied Physiology*, 74(1), 359–368.
- [7]. Bompa, T. O., & Haff, G. G. (2009). *Periodization: Theory and methodology of training* (5th ed.). Human Kinetics.
- [8]. Brown, L. E., & Ferrigno, V. A. (2005). *Training for speed, agility, and quickness* (2nd ed.). Human Kinetics.
- [9]. Carter, J. E., Beam, W. C., McMahan, S. G., Barr, M. L., & Brown, L. E. (2003). The effects of stability ball training on spinal stability in sedentary individuals. *Journal of Strength and Conditioning Research*, 17(3), 556–561.
- [10]. Chaudhuri, A., & Banerjee, S. (2010). Influence of Indian classical dance on motor fitness variables. *Indian Journal of Physical Education, Sports Medicine & Exercise Science*, 10(2), 45–50.
- [11]. Chouhan, S., & Koley, S. (2017). Effect of rhythmic training on agility and coordination among athletes. *International Journal of Physical Education, Fitness and Sports*, 6(2), 15–20.
- [12]. Clarkson, P. M. (1999). *Exercise and sport science*. Lippincott Williams & Wilkins.
- [13]. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- [14]. Davlin, C. D. (2004). Dynamic balance in high-level athletes. *Perceptual and Motor Skills*, 98(3), 1171–1176.
- [15]. Dhananjayan, V. P. (2002). *Classical Indian dance in literature and the arts*. Bharatiya Vidya Bhavan.
- [16]. Fleck, S. J., & Kraemer, W. J. (2014). *Designing resistance training programs* (4th ed.). Human Kinetics.
- [17]. Gabbett, T. J. (2008). Do skill-based conditioning games offer a specific training stimulus for junior elite volleyball players? *Journal of Strength and Conditioning Research*, 22(2), 509–517.
- [18]. Gambetta, V. (2007). *Athletic development: The art and science of functional sports conditioning*. Human Kinetics.
- [19]. Ghosh, S. (2015). Rhythmic movement and neuromuscular coordination among athletes. *International Journal of Sports Sciences*, 5(4), 142–147.
- [20]. Haff, G. G., & Triplett, N. T. (2016). *Essentials of strength training and conditioning* (4th ed.). Human Kinetics.
- [21]. Harre, D. (1982). *Principles of sports training*. Sportverlag.
- [22]. Hedge, S. S., & Rao, P. (2018). Effect of dance movement training on balance and coordination. *Journal of Physical Education Research*, 5(1), 21–27.

- [23]. Johnson, B. L., & Nelson, J. K. (1986). Practical measurements for evaluation in physical education (4th ed.). Burgess Publishing.
- [24]. Kaur, P., & Singh, J. (2019). Impact of rhythmic exercises on agility among football players. *International Journal of Physiology, Nutrition and Physical Education*, 4(1), 112–115.
- [25]. Kisner, C., & Colby, L. A. (2012). *Therapeutic exercise: Foundations and techniques* (6th ed.). F. A. Davis.
- [26]. Kumar, R., & Sharma, A. (2016). Influence of dance-based movement training on selected motor fitness variables. *Asian Journal of Physical Education and Computer Science in Sports*, 14(1), 35–40.
- [27]. Magill, R. A. (2011). *Motor learning and control: Concepts and applications* (9th ed.). McGraw-Hill.
- [28]. Matveyev, L. P. (1981). *Fundamentals of sports training*. Progress Publishers.
- [29]. McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). *Exercise physiology: Nutrition, energy, and human performance* (8th ed.). Wolters Kluwer.
- [30]. Miller, M. G., Herniman, J. J., Ricard, M. D., Cheatham, C. C., & Michael, T. J. (2006). The effects of a 6-week plyometric training program on agility. *Journal of Sports Science and Medicine*, 5(3), 459–465.
- [31]. Mohan, V., & Thomas, P. (2020). Effect of footwork drills on performance variables among football players. *International Journal of Physical Education, Sports and Health*, 7(4), 88–92.
- [32]. Nande, P., & Vali, S. (2014). Influence of dance training on motor fitness variables. *Golden Research Thoughts*, 3(8), 1–5.
- [33]. Nataraj, R. (2013). *Kathak dance: Tradition and innovation*. Abhinav Publications.
- [34]. Patel, D., & Mehta, R. (2017). Neuromuscular adaptations through rhythmic movement training. *International Journal of Yoga, Physiotherapy and Physical Education*, 2(6), 30–34.
- [35]. Plisk, S. S. (2008). *Speed, agility, and speed-endurance development*. Ultimate Athlete Concepts.
- [36]. Powers, S. K., & Howley, E. T. (2018). *Exercise physiology: Theory and application to fitness and performance* (10th ed.). McGraw-Hill Education.
- [37]. Rai, L., & Gupta, N. (2018). Effects of classical dance movement patterns on balance performance. *International Journal of Physical Education and Sports Sciences*, 13(2), 56–61.
- [38]. Reilly, T., Bangsbo, J., & Franks, A. (2000). Anthropometric and physiological predispositions for elite soccer. *Journal of Sports Sciences*, 18(9), 669–683.
- [39]. Schmidt, R. A., & Lee, T. D. (2011). *Motor control and learning: A behavioral emphasis* (5th ed.). Human Kinetics.
- [40]. Singh, H. (1991). *Science of sports training*. DVS Publications.
- [41]. Singh, K., & Verma, A. (2019). Effect of dance therapy exercises on physical fitness variables among athletes. *International Journal of Physiology and Nutrition*, 4(2), 55–59.
- [42]. Sinha, A. (2016). Rhythmic footwork training and sports performance. *Journal of Exercise Science and Physiotherapy*, 12(1), 22–27.
- [43]. Stork, H. (1989). Balance performance and postural stability assessment in sports. *European Journal of Physical Education*, 5(2), 66–72.
- [44]. Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2015). *Research methods in physical activity* (7th ed.). Human Kinetics.
- [45]. Verma, J. P. (2013). *Data analysis in management with SPSS software*. Springer.
- [46]. Weineck, J. (2007). *Optimizing training performance*. Human Kinetics.
- [47]. Wilmore, J. H., Costill, D. L., & Kenney, W. L. (2008). *Physiology of sport and exercise* (4th ed.). Human Kinetics.
- [48]. Yadav, P., & Sharma, R. (2021). Effect of rhythmic movement exercises on speed and agility among football players. *International Journal of Physical Education and Sports*, 8(1), 40–45.
- [49]. Young, W. B., James, R., & Montgomery, I. (2002). Is muscle power related to running speed with changes of direction? *Journal of Sports Medicine and Physical Fitness*, 42(3), 282–288.
- [50]. Zatsiorsky, V. M., & Kraemer, W. J. (2006). *Science and practice of strength training* (2nd ed.). Human Kinetics.