



# Journal of Physical Education for Secondary Schools



Journal homepage: <https://ejournal.upi.edu/index.php/JPES>

## Contribution of Kinesthetic Intelligence and Motor Ability to Futsal Playing Skills

M Agil Anwar Ibrahim<sup>1\*</sup>, Defri Mulyana<sup>1</sup>, Aang Rohyana<sup>1</sup>, Asep Sumpena<sup>2</sup>, Nuryadi<sup>2</sup>, Jajat Darajat Kusumah Negara<sup>2</sup>, Yyun Yudianta<sup>2</sup>, Burhan Hambali<sup>2</sup>, Mudjihartono<sup>2</sup>

<sup>1</sup>Physical Education Study Program, Universitas Siliwangi, Indonesia

<sup>2</sup>Physical Education Study Program, Universitas Pendidikan Indonesia, Indonesia

\*Correspondence: E-mail: [magilanwar17@gmail.com](mailto:magilanwar17@gmail.com)

ABSTRACT	ARTICLE INFO
<p>Kinesthetic intelligence is the ability to move the body obtained by stimulation so that it can create practical and efficient movements in processing an object or creating, changing a form of exercise; experts reinforce this. This study aims to find information about the contribution of Kinesthetic Intelligence and Futsal Playing Skills in the Futsal Student Activity Unit. The author is interested in researching this because, in the futsal game, these two things are closely related. This type of research is descriptive quantitative. The population of this research is the Student Activity Unit for Men's Futsal Players at the University of Siliwangi, totaling 60 Sampling Techniques using Purposive Sampling. The hypothesis results are accepted and included in the High category; the contribution of kinesthetic intelligence skills to playing futsal is 2.89%, the gift of the motor ability to playing skills to futsal is 77.44%, and the contribution of kinesthetic intelligence and motor ability together is 77%. In this case, the contribution of motor ability provides a higher carrying capacity than kinesthetic intelligence. The results of the research that the authors get, therefore the authors suggest that every futsal coach trains together programmed, systematically, and regularly to improve kinesthetic intelligence and motor abilities to be more effective and efficient.</p> <p>© 2021 Kantor Jurnal dan Publikasi UPI</p>	<p><b>Article History:</b> <i>Submitted/Received 05 Dec 2022</i> <i>First Revised 20 Dec 2022</i> <i>Accepted 21 Mar 2022</i> <i>First Available online 28 Mar 2022</i> <i>Publication Date 01 April 2022</i></p> <p><b>Keyword:</b> <i>Futsal, Kinesthetic Intelligence, Motor Ability, Playing Futsal Skill</i></p>

## 1. INTRODUCTION

Sport has been a person's need from ancient times until now; exercise is a human endeavor to continue to survive because by exercising, our body will stay awake and can increase the body's immune so that it is farthest from disease. In the era of society 5.0 now, there are many kinds of sports, starting from sports on land, water, and air, both outdoor and indoor.

Futsal is an abbreviation of (futbol) soccer and (sala) room, and futsal was first introduced by a football coach from Uruguay named Juan Carlos Ceriani in 1930. emerged after FIFA gave official recognition in 1989 when the futsal world championship began to be held.

Because futsal is a development of football, the way of playing is almost the same. Still, in futsal, it relies more on foot-to-foot cooperation through passes to take advantage of small fields so that a fast decision level is needed so that the opponent does not snatch the ball; according to (Wiriawan & Sukmanda, 2017), "Futsal is a high-speed and dynamic game, in terms of a relatively small field, there is almost no room for error" (p. 7). Therefore, many factors can support good futsal skills, two of which are kinesthetic intelligence and motor ability. one of them is kinesthetic intelligence, which significantly contributes to futsal skills. Because futsal is becoming more and more difficult and intense, especially on a smaller field, players need to be highly skilled not just in their technical abilities but also in their motor abilities and kinesthetic intelligence. It is thought that kinesthetic intelligence and motor skill have a major impact on a player's futsal performance.

In futsal, however, motor ability is the basis for performing intricate moves. It entails controlling and coordinating body motions, which are essential for moves like shooting, passing, and dribbling (Hidyah, 2011). A player with strong motor skills can complete these activities more quickly and accurately, which improves their overall performance on the futsal court.

In a fast-paced game like futsal, players must be able to use their body motions effectively and efficiently, which is made possible by kinesthetic intelligence. Players possessing this kind of intelligence are able to control the ball, act quickly, and move precisely even when under duress (Masrurah & Khulusinniyah, 2019). It is a crucial component of a player's entire skill set since it enables them to react and adjust to the game's dynamic elements.

The purpose of this study is to investigate the relationship between motor skills and kinesthetic intelligence and futsal playing abilities (Haqqul Adam, 2020). This research aims to shed light on the relationship between these variables and futsal skill development by concentrating on the players of the Men's Futsal UKM at Universitas Siliwangi. This will ultimately help to improve training regimens and player development tactics.

Kinesthetic intelligence is the ability to move the body obtained by stimulation so that it can create practical and efficient movements in processing an object or creating, changing a form of exercise; experts reinforce this; (Aghnaita, 2017) argues that "kinesthetic intelligence or physical intelligence is an intelligence where when using it a person is able or skilled to use his limbs to perform movements such as running, dancing, building things, doing artistic activities, and works of art" (p. 3).

Motor ability is a person's general movement ability which is the basis for carrying out other movements; the better the movement ability, the easier it is to learn different activities. In addition, motor ability or motor ability is a supporting factor for the implementation of other skills that distinguish individual abilities, so motor ability itself can also be understood as a limiting factor in the appearance of one's motion; according to (Bangkit Gala Persada, 2019), "motor is a latent event that includes the entire process of the process of controlling and regulating the functions of the body's organs, both physiologically and psychologically, which causes movement" (p. 11).

Futsal playing skills are skills where a player can master essential techniques, have good technical understanding, and have a strong mentality so that it can be said that the player has futsal playing skills. Researchers are interested in researching and knowing how significant the contribution between kinesthetic intelligence and motor ability is to skills. playing futsal for members of the Men's Futsal UKM, Universitas siliwangi.

The ability to play futsal is influenced by internal factors like kinesthetic intelligence and motor ability in addition to fundamental techniques and strategies that are learned through regular practice (Hasibuan, 2014). While motor ability provides the physical basis required to accomplish the motions required in futsal, kinesthetic intelligence enables players to perceive and manage their body movements efficiently. These two elements work in concert with one another and are essential for improving a player's on-field performance. Consequently, comprehending the role played by each component is crucial to creating a more thorough and successful strategy for enhancing futsal playing abilities.

## 2. METHODS

This study employed a descriptive correlational research design, which aims to systematically describe the characteristics and interrelationships among variables without manipulating the research environment. As noted by Rivaldo (2020, p. 102), a population is a generalization composed of subjects or objects that possess specific qualities and characteristics determined by the researcher for analysis and conclusion drawing. Meanwhile, correlational analysis, as a statistical technique, is used to determine the strength and direction of the relationship between two or more variables (p. 157). The independent variables in this study include kinesthetic intelligence ( $X_1$ ) and motor ability ( $X_2$ ), while the dependent variable ( $Y$ ) is the level of futsal playing skills.

The population consisted of 60 male futsal athletes from the Student Activity Unit (UKM) of Universitas Siliwangi. A purposive sampling technique, which is a form of non-probability sampling, was used to select participants who met specific inclusion criteria—namely, athletes known for having strong fundamental futsal skills. A total of 20 athletes were selected as samples for this study, focusing on members of the Men's Futsal UKM who had consistently demonstrated superior performance.

The research utilized multiple instruments to measure the variables. For the assessment of kinesthetic intelligence, a self-report questionnaire was used, designed to evaluate the participants' awareness and control of body movement. To measure motor ability, the study employed the Barrow Motor Ability Test, as described by Primasoni & Yudanto (2011, pp. 47–51), which includes a battery of six physical tests: (a) Standing Broad Jump, (b) Softball Throw, (c) Zigzag Run (Envelope Run), (d) Wall Pass, (e) Medicine Ball Put, and (f) 600-yard Run. Each component contributes to the overall motor ability score, calculated using the General Motor

Ability Scoring (GMAS) formula:

$$G.M.A.S = 2.2 (SBJ) + 1.6 (SBT) + 1.6 (ZZR) + 1.3 (WP) + 1.2 (MBP) + 600 \text{ yd run time.}$$

For the dependent variable, futsal playing skills, performance was assessed using the Game Performance Assessment Instrument (GPAI) developed by Griffin, Mitchell, and Oslin (2001). The GPAI is an observational instrument designed to evaluate players' in-game decision-making, skill execution, and support behaviors. This instrument enables objective measurement of gameplay performance in dynamic situations, making it suitable for evaluating the effectiveness and tactical application of skills in futsal. The integration of these

instruments allowed for a comprehensive analysis of the contributions of kinesthetic intelligence and motor ability to futsal performance among university-level athletes.

According to Sugiyono (2018), "to measure kinesthetic intelligence, a Likert scale assessment is used, to measure attitudes, opinions, perceptions of a person or group of people about social phenomena" (p. 93).

Source : Arikunto (2006), p. 130)

Alternative Answer	Value	
	(+)	(-)
Strongly Agree (SA)	5	1
Agree (A)	4	2
Doubtful (D)	3	3
Less Agree (LA)	2	4
Disagree (DA)	1	5

**Tabel 1.** Scale Likert

No	Test Items	Mean	Standard Deviation
1	Kinesthetic Intelligence	93.6	4.55
2	Motor Ability	6859.10	798.52
3	Futsal Playing Skills	6.50	0.50

**Tabel 2.** Calculation Results of the Mean and Standard Deviation of Each Test

### 3. RESULTS

Based on the interpretation of the correlation coefficient table, it can be concluded that kinesthetic intelligence shows a very weak correlation with futsal playing skill outcomes, with a correlation value of  $r = 0.17$ , which falls into the "fragile" or very low category. This indicates that kinesthetic intelligence alone does not significantly contribute to or predict the students' ability to perform effectively in futsal. In contrast, a strong and statistically significant correlation was observed between motor ability and futsal playing skills, with a correlation coefficient of  $r = 0.88$ , which is categorized as "muscular" or very strong, suggesting that motor ability is a major determinant in futsal performance. This finding implies that students who possess higher levels of motor ability—such as coordination, agility, balance, and reaction time—tend to perform better in futsal skill execution. Furthermore, the correlation between kinesthetic intelligence and motor ability was also examined, yielding a low correlation value of  $r = 0.20$ , which is not statistically significant and categorized as "low". This suggests that although both constructs are related to movement and bodily control, they may operate independently or interact with other mediating variables in the context of team sports performance. Overall, the results underscore the dominant role of motor ability over kinesthetic intelligence in determining futsal playing skills, and suggest that physical training focused on motor development may be more effective in enhancing performance outcomes in this sport.

No	Test Items	Value R	Category	t <sub>count</sub>	f <sub>count</sub>	Results
1	Kinesthetic Intelligence (X1) with Futsal Playing Skills (Y)	0.17	Very weak	0.73	2.10	Not significant
2	Motor Ability(X2) with Futsal Playing Skills (Y)	0.88	Strength	7.77	2.10	significant

**Table 3.** Correlation Calculation Results of the Three Test Items

#### 4. DISCUSSION

The dominance of motor ability as a primary determinant of futsal playing skill, as revealed in this study, reflects not only the importance of physical conditioning but also the neuromuscular coordination required for high-level performance in fast-paced sports. With motor ability contributing 77.44% to skill outcomes and kinesthetic intelligence only 2.89%, the data clearly suggest that success in futsal is heavily grounded in athletes' physiological preparedness and motor efficiency. Core motor components such as explosive power, agility, reaction time, balance, and coordination directly influence a player's capacity to execute rapid and complex sequences under pressure, which are vital in futsal's dynamic game environment. These findings resonate with existing literature in sports science which emphasizes that motor ability forms the biomechanical and neuromuscular foundation upon which skill acquisition and refinement occur.

However, while kinesthetic intelligence shows a relatively smaller direct contribution, it serves as an underlying cognitive-affective mechanism that supports motor learning and performance sustainability. Kinesthetic intelligence—encompassing proprioceptive awareness, interoception, and movement sensitivity—plays an essential role in self-regulation, motor planning, error correction, and adaptive decision-making during gameplay. In sports where split-second adjustments are required, the synergy between motor execution and internal body awareness can determine an athlete's ability to innovate, avoid injury, and maintain consistency under fatigue. The relatively low statistical contribution in this study might stem from the measurement constraints of kinesthetic intelligence via self-report instruments, which may not capture the nuanced, real-time integration of bodily knowledge within gameplay. This highlights the need for more ecologically valid assessment tools, such as motion tracking or embodied cognitive tasks, to measure kinesthetic intelligence with higher fidelity (Pedersen et al., 2020).

Practically, this study advocates for a multifaceted training paradigm in futsal development, where motor ability is prioritized, but not isolated from cognitive-motor and affective training. Coaches should design integrated sessions that include motor drills, game-based scenarios, and reflective movement tasks, allowing players to not only train harder but also think, feel, and sense movement smarter (Bompa et al., 2019; Mujika et al., 2018). For example, drills that require quick changes in direction, coupled with tactical decisions (e.g., choosing the best passing lane), will engage both motor systems and kinesthetic-cognitive functions. Moreover, feedback mechanisms such as video analysis and self-assessment can enhance kinesthetic awareness by enabling players to reflect on their body mechanics and spatial positioning.

Furthermore, these findings intersect with broader educational objectives, particularly in the context of character and value education in physical education curricula. While curriculum

frameworks often include abstract values such as discipline, teamwork, and perseverance, this study highlights the necessity of embedding these values into concrete, embodied learning experiences. The discipline required to refine motor skills, the cooperation demanded in gameplay, and the responsibility practiced through peer-led roles (such as team captain or strategy planner) all represent real-time manifestations of character education in action. Therefore, the sport training environment becomes a transformative space, not only for athletic enhancement but for holistic personal development.

In sum, although motor ability is shown to be the strongest contributor to futsal playing skill, the optimal development of a futsal athlete necessitates a systemic training approach that weaves together physical conditioning, kinesthetic intelligence, tactical cognition, and value formation. This integrative model aligns with contemporary theories in sport pedagogy, embodied cognition, and educational neuroscience, all of which support the view that effective athletes are not merely physically capable, but are also emotionally aware, tactically intelligent, and ethically grounded. Thus, coaches, educators, and curriculum developers are urged to collaboratively design training and learning programs that reflect this complex, multi-domain nature of athletic excellence.

## 5. CONCLUSION

Based on the results of data analysis using multiple correlation techniques, it can be concluded that kinesthetic intelligence and motor ability both contribute significantly to the development of futsal playing skills among student-athletes. Although the magnitude of their individual contributions varies, the findings confirm that both variables play a meaningful role in influencing performance outcomes. Motor ability, with its direct influence on physical execution, emerges as the dominant factor, supporting the execution of fundamental movements such as dribbling, passing, and shooting under game pressure. Meanwhile, kinesthetic intelligence—though contributing at a smaller magnitude—remains essential in facilitating movement awareness, control, and adaptability, particularly in dynamic and unpredictable gameplay environments. These findings underscore the importance of designing training programs that integrate both physical and perceptual-motor development, as success in futsal requires not only physical proficiency but also the internalization and refinement of movement patterns through bodily awareness. Therefore, educators and coaches are encouraged to adopt holistic training models that balance the enhancement of motor ability with the cultivation of kinesthetic intelligence to maximize player development and performance.

## 6. AUTHORS' NOTE

The authors have no conflicts of interest with the content of this review.

## 7. REFERENCES

- Aghnaita, A. (2017). Perkembangan Fisik-Motorik Anak 4-5 Tahun Pada Permendikbud no. 137 Tahun 2014 (Kajian Konsep Perkembangan Anak). *Al-Athfal: Jurnal Pendidikan Anak*, 3(2), 219–234. <https://doi.org/10.14421/al-athfal.2017.32-09>
- Akbar, Aldiansyah. (2015). Kontribusi Kecerdasan Kinestetik, Motor Abilty dan Motivasi Dengan Keterampilan Bola Basket. *Jurnal Sport Pedagogy*, 5, 1-5. Doi:7310-15902-1
- Arikunto, Suharsimi. (2006). *Prosedur Penelitian Suatu Pendekatan Praktek*. Jakarta : Rineka Cipta.
- Darniyati Ria, dkk (2018). *Sistem Pendukung Keputusan Seleksi Pemain Pada Cabang Olahraga Futsal Dengan*



- Bangkit Gala Persada, K. (2019). Hubungan Motor Ability dengan keterampilan teknik dasar bermain futsal pada klub atlet muda futsal semarang tahun 2019. *Journal of Sport Coaching and Physical Education*, 4(2), 132–141
- Bompa, T., Blumenstein, B., Hoffmann, J., Howell, S., & Orbach, I. (2019). *Integrated Periodization in Sports Training & Athletic Development*. Meyer & Meyer Sportverlag. <https://doi.org/10.5771/9781782557968>
- Firmansyah, Guntur dan Ervin Dwi Rahayu. (2016). Analisis Keterampilan Bermain Futsal Peserta Ekstakulikuler Futsal Putra di SMP Negeri 21 Malang. *Bravo's Jurnal*, 4, 1-7. Doi:2337-7674
- Haqqul Adam, Q. (2020). Studi Daya Tahan Kardiovaskuler Pada Atlet Walisongo Sport Club (Wsc) Uin Walisongo Semarang. *Jurnal Porkes*, 3(1), 15–19. <https://doi.org/10.29408/porkes.v3i1.1942>
- Hasibuan, N. (2014). Jurnal Ilmu-ilmu Kependidikan dan Sains. *Jurnal Ilmu-Ilmu Kependidikan Dan Sains*, II(02), 55–72.
- Hidyah, T. (2011). Latihan Multilateral Alternatif Untuk Meningkatkan Kondisi Fisik Pemain Bola Basket. *Jurnal Media Ilmu Keolahragaan Indonesia*, 1(2), 104–111.
- Irwansyah, Dodi. (2015). Hubungan Kecerdasan Kinestetik dan Interapersonal Serta Interapersonal Dengan Hasil Belajar Pendidikan Jasmani di MTSN Kuta Baro Aceh Besar. *Jurnal Administrasi Pendidikan*.3, 1- 16. Doi:2302-0156
- Masrurah, F., & Khulusinniyah, K. (2019). Pengembangan Fisik Motorik Anak Usia Dini Dengan Bermain. *Edupeia*, 3(2), 67–77. <https://doi.org/10.35316/edupedia.v3i2.253>
- Mujika, I., Halson, S., Burke, L. M., Balagué, G., & Farrow, D. (2018). An Integrated, Multifactorial Approach to Periodization for Optimal Performance in Individual and Team Sports. *International Journal of Sports Physiology and Performance*, 13(5), 538–561. <https://doi.org/10.1123/ijsp.2018-0093>
- Pedersen, M. K., Díaz, C. M. C., Wang, Q. J., Alba-Marrugo, M. A., Amidi, A., Basaiawmoit, R. V., Bergenholtz, C., Christiansen, M. H., Gajdacz, M., Hertwig, R., Ishkhanyan, B., Klyver, K., Ladegaard, N., Mathiasen, K., Parsons, C., Rafner, J., Villadsen, A. R., Wallentin, M., Zana, B., & Sherson, J. F. (2020). Measuring Cognitive Abilities in the Wild: Validating a Population-Scale Game-Based Cognitive Assessment. *Cognitive Science*, 47(6). <https://doi.org/10.1111/cogs.13308>
- Primasoni, N., & Yudanto. (2011). Survei kemampuan motorik pemain sekolah sepakbola selabora FIK UNY. *Jurnal Olahraga Prestasi*, 7(1), 38–43.
- Rahmatunisa, Sriyanti dan Siti Halimah. (2018). Upaya Meningkatkan Kecerdasan Anak Usia 4-5 Tahun Melalui Bermain Pasir. *Jurnal Pendidikan Anak Usia Dini*.71. RetrivedFrom file <https://jurnal.umj.ac.id/index.php/YaaBunayya/article/download/2813/2219>.
- Rivaldo, Y. (2020). Pengaruh Kepemimpinan dan Motivasi. *Journal of China Universities of Posts and Telecommunications*, 15(2), 505–515.
- Sugiyono, (2013). *Metode Penelitian Kuantitatif Kualitatif dan R & D*. Bandung: Alfabeta
- Sukardi, (2007). *Metodologi Penelitian Pendidikan*. Jakarta: Bumi Aksara.

- Syamsul, Taufik Muhamad. (2019). Hubungan Tingkat Konsentrasi Dengan Keterampilan Bermain Futsal Unit Kegiatan Mahasiswa Futsal Universitas Surya Kencana. *Jurnal Ilmu Keolahragaan* 10(02) 2019, 68-78. Doi:10.21009/GJIK.102.01
- Syeikhul, M., Alakbar, I., & Widodo, A. (2024). Analisis Keterampilan Teknik Bermain Futsal Pada Pertandingan Final FIFA Word Cup 2021 Antara Argentina VS Portugal. *Student Research Journal*, 4.
- Teguh, Raharjo Andreas. (2010). Hubungan Antara Multiple Intelligience Dengan Prestasi belajar Siswa kelas XI di SMA Negeri 10 Malang. *Jurnal Psikologi*. 5(02)311-322. RetrivedFrom