



Exercise Models and Physical Conditions to Improve Futsal Play: Literature Review

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Abstract. Exercise is a human need as a refresher amid a routine of daily activities and fitness in the hope that the body will stay healthy and fit. Various types of sports activities dominated during the boom such as tournaments, competitions, and leagues both at the national and international levels, especially bringing achievements to Indonesia. The purpose of this study was to find out the ideal training model to improve the physical condition in the sport of futsal. The method used in this study is a literature review with 10 journals sourced from google scholar. The results of this study show that the training models that can improve the physical condition in futsal sports are agility (ladder drill training, Jack Knife Stretching training, and circuit training with the ball,) speed (Jack Knife Stretching training and circuit training exercises with the ball), coordination (side jump sprint training, dogging run, agility hurdle drill and agility leader) and endurance (circuit training exercises with the ball, interval training. However, the next review of the literature to consider psychological factors, and geographical locations related to similar studies.

Keywords: Training Model · Physical Condition · Futsal

1 Introduction

Sports are divided by their nature or purpose, namely achievement sports, recreational sports, health sports, and educational sports [1]. Futsal is one of the sports, according to history in Indonesia Futsal developed from 1998–1999 and in 2000 it began to be known by the wider community, then in 2002, Indonesia was asked by the AFC to hold the Asian Cup championship. Futsal is a multi-sprint sport that has a high-intensity phase compared to football and other intermittent sports [2]. To get optimal achievements in the game of futsal, in addition to each player must have strength, speed, agility, flexibility, accuracy, and endurance and must also master the basic skills of playing [3].

Physical condition is a factor that greatly affects a person's achievements. Without good physical condition, the technique cannot run perfectly [4, 5]. In sports, there are several elements of physical condition that encourage the achievements of an athlete, namely strength, speed, endurance, flexibility, balance, coordination, and agility [6, 7]. The ability of physical condition largely determines whether a person optimizes the

techniques studied. Good physical condition is the main prerequisite for mastering and developing an engineering skill [8]. Physical condition is a state that includes factors of strength, speed, endurance, flexibility, and coordination [9]. From some of the opinions above, eating can be interpreted that a physical condition is a physical state that includes all physical activities such as speed, agility, flexibility, strength, explosive power, and endurance [6].

Athletes have good physical conditions according to age because if an athlete does not have a good physical condition when the athlete is competing in the field, his performance will not be optimal and have a bad impact on the athlete participants [7, 10, 11].

Based on the observations of researchers at the amateur futsal sports training center in the city of Salatiga in several training grounds where there are amateur futsal clubs, researchers made observations on coaches. The coach states that the exercise program is only based on the incidental coach, there is no program, there is no program systematically, and specifically one used to improve the physical condition of the athlete. Then in extracurricular activities in schools futsal, extracurricular coaches schools only involve training on match simulation activities, without any special exercises that concern physical condition. Even though physical condition is very important for futsal sports considering that futsal sports are of high intensity. With the width of the field that is not so wide, with a short match time so that to produce scores and victories, excellent physical condition is needed so that athletes can produce achievements.

Based on the current conditions, researchers can't conduct research face-to-face, so based on these conditions researchers take consider conducting a literature review or literature review to capture the photograph and document exercise models that can be used to improve the physical condition of amateur futsal athletes. From the description above, the reviewer is interested in taking the title "Literature Review: Training Model for Improving Futsal Physical Condition".

2 Method

The purpose of this study was to find out the training model for improving the physical condition of the sport of futsal: a literature review.

a. Research Methods

The research method used is a literature review using the Google Scholar database with the keywords training physical conditions of futsal players. The articles analyzed were published from 2015 to 2021, using the following inclusion criteria: research article, indexed, Sinta 2,3,4,5 and 6 descriptive survey research methods, population/sample/study subjects futsal players.

b. Data Collection Techniques

This literature study research uses two techniques in collecting data, namely: (1) Documentation, which is how to collect data by collecting and writing existing data. The data found from sources are arranged in such a way and classified according to categories and then carried out an analysis; and (2) Literature, namely research, is carried out by literature studies without empirical testing. The way it is carried out is in a series of

Table 1. Data reviewed by 10 articles

Authors/ Year	Journal Index	Sample Characteristics	N	Measurement Variables	Research Findings
Mashud & Muhammad Karnadi (2015)	Sinta 4	Pre-PON Futsal Athletes	19	Physical condition of futsal	Pelatihan <i>ladder drill</i> can provide different results on the agility test results (<i>zigzag run</i>) of Pre PON South Kalimantan futsal players.
Rizki Mulyawan, didik zafar sidik, Nida'ul Hidayah (2016)	Sinta 4	UPI Women's Futsal Players (Isola FC)	20	Limb Power Endurance	There is no improvement in the harness training pattern toward increasing limb power endurance. But if the interval method the increase is greater compared to the repetition method
Adi Sumarsono (2017)	Sinta 3	Futsal UKM Member	26	Foot Coordination	- Ada the effect of the use of <i>the agility hurdle drill</i> training method on the coordination of the legs of members of the Musamus University Futsal UKM - There is an influence of the use of <i>the agility leader</i> training method on the coordination of the legs of members of the Musamus University Futsal UKM. - There is a significant difference between the influence of <i>the agility hurdle drill</i> training method and the <i>agility leader</i> training method on foot coordination in SME members
Nisa'ul Mubarakah (2017)		Futsal Players	20	Limb Muscle Endurance and Agility	- There is an increase endurance of the limb muscles and agility after circuit <i>training</i> futsal players.

(continued)

Table 1. (continued)

Authors/ Year	Journal Index	Sample Characteristics	N	Measurement Variables	Research Findings
Sulfian Syarif, Suwardi (2017)	Sinta 5	High school students	40	Ankle and Dribbling Coordination	<ul style="list-style-type: none"> - There are differences in the influence of <i>the side jump sprint</i> training method with <i>dodging run</i> on the dribbling ability in football games - There is an influence of the interaction between the training method and the coordination of the eyes on the dribbling ability in football games - There are differences in the effect of improving dribbling ability through <i>the side jump sprint</i> exercise method with <i>dodging run</i> for students who have high eye-foot coordination in football games - There are differences in the effect of improving dribbling ability through <i>side jump sprint</i> and <i>dodging run</i> exercise methods for students who have low eye-foot coordination in football games
Sepriadi, arsil, noble dhino army (2018)	Sinta 5	Futsal Players	18	Interval Training Exercises and Aerobic Endurance	Latihan intervals have a significant influence on improving the aerobic endurance of adrenaline FC Padang futsal players.
Firman Juniatur Rahman (2018)	Sinta 2	Futsal Players	30	Circuit Training Methods, Endurance, Kleincahan, And Speed.	training <i>circuit training</i> with the ball and without the ball is effective for increased speed, agility, and endurance.

(continued)

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Authors/ Year	Journal Index	Sample Characteristics	N	Measurement Variables	Research Findings
Aco Tang, Hendrik Padang, Inosensius Gabriel Nining Wean (2020)	Sinta 4	Futsal Players	20	Physical Exercise, Muscle Strength	The provision of physical exercise in the treatment group increased muscle strength by 36.25 ± 11.307 while in the control group there was an increase of 7.92 ± 9.643 . In the test of differences in influence, the value of the difference in the value of $p = 0.000 < 0.05$ was obtained, which means that there is a significant difference between the treatment and control groups.
Anita Faradilla Rahim, Safun Rahmanto, Safun Rahmanto, Putu Maryansyah Indra Fahlefi, Ali Multazam (2020)	Sinta 6	Futsal Players	15	Ladder Drill Exercise, Speed and Agility.	Adanya influences ladder drill exercises on the speed and agility of futsal players.
Anita Faradilla Rahim, Safun Rahmanto, Baiq Farlindia, Zidni Imanurrohim L (2021).	Sinta 6	Futsal Players	11	Jack Knife Stretching and Agility	There is an influence of Jack Knife Stretching on the agility of futsal players.

activities related to the method of collecting library data, reading, and recording, as well as processing research materials.

c. Data Analysis Techniques

In the process of analyzing the data, the researcher uses deductive analysis. A deductive analysis is drawing a conclusion starting from a general statement to a specific statement using a way of reasoning or ratio (rational thinking).

3 Results and Discussion

Based on the results of a landslide review of the article, it can be follows (Table 1):

4 Discussion

Of the ten literature reviews, there is Instrumen's research used covers: a physical condition in the form of agility, speed, coordination, and endurance.

a. Physical condition training Agility

- 1) The results is ladder drill exercises can make a significant contribution to improving agility ability. A ladder drill is a form of jumping exercise using one or two feet by jumping over a rope in the form of a ladder placed on the floor or ground. Ladder drills are commonly used by athletes to increase agility[12]. According to Brown & Ferrigno, in their book *Training for Speed, Agility, and Quickness* “to be able to increase agility one of them can be by using ladder tools”. A ladder is a form of physical exercise whose function is to train leg agility and synchronization of movement in a balanced manner.

Ladder drill exercise will increase speed, agility, and coordination as well as nerve conductivity, causing increased coordination in the neuromuscular which will form the effectiveness and efficiency of limb movements[22]. A ladder exercise is a ladder used to increase agility, agility, and speed of movement. Practicing ladder dexterity will help improve various aspects of the basic movements of sports such as improving body balance, reflex movements, muscular endurance, reaction speed, and coordination between body parts. In addition to physical benefits, the continuous exercise of dexterity ladders will help in improving the nervous system, the stamina of the body, and the strength of the leg muscles.

- 2) Increase agility is by gift exercise Jack Knife Stretching because one factor that affects agility is flexibility, the better the flexibility of the player, the more agility the player will increase his agility [21]. The static stretching method is done by itself by stretching the hamstring muscle slowly until it is stretched out to the maximum, with the static method not causing stimulation to the spindle muscle, but after stretching it optimally until the muscle hurts, it will stimulate the spindle muscle to contract and give a signal to the spinal medulla so that muscle lengthening is no longer possible.
- 3) The exercise method using circuit training conducted for 6 weeks can increase agility[15]. Circuit training exercises with the ball were more effective at increasing endurance, agility, and speed in this study[18]. This is because circuit training with the ball is to train the feeling of the ball with the ball where during the game it is very useful, and when there is an excitatory ball physiologically the body automatically responds to body movements faster in addition to the body loading of the athlete himself. From what has been described circuit training with the ball is more effective at increasing the three variables in this study than circuit training without a ball.

b. Physical condition training Speed

- 1) Increase speed is by gift exercise Jack Knife Stretching because one factor that affects agility is flexibility, the better the flexibility of the player, the better the flexibility the player, more agility will increase his agility [21]. The static stretching method is done by itself by stretching the hamstring muscle slowly until it is stretched out to the maximum, with the static method not causing stimulation to the spindle muscle, but after stretching it optimally until the muscle feels sore, it will stimulate the spindle muscle to contract and give a signal to the spinal medulla so that muscle lengthening is no longer possible.
- 2) Circuit training exercises with the ball are more effective in increasing the speed of circuit training without a ball [18]. Circuit training exercises with the ball more effectively improved all three variables in this study. This is because circuit training with the ball is to train the feeling of the ball with the ball where during the game

it is very useful, and when there is an excitatory ball physiologically the body automatically responds to body movements faster in addition to the body loading of the athlete himself. From what has been described circuit training with the ball is more effective at increasing the three variables in this study than circuit training without a ball.

c. Physical condition training Speed

- 1) Based on the research that has been carried out, the agility hurdle drill training method and agility leader training can influence the improvement of leg coordination [14]. This is because agility hurdle drills and agility leader exercises are part of the form of agility training. The difference between these two types of exercises is the fast type of motion with the addition of explosive movements jumping upwards. The provision of high-intensity exercises, short recovery, and varied reps cause an increase in the ability of the heart's working system (cardiovascular fitness). A high level of muscle fitness affects the improvement of mastery of a person's abilities and movement skills.
- 2) To improve ankle coordination, exercises can be done with the side jump sprint and dogging run exercise methods [16].

d. Exercise of the physical condition of endurance

- 1) The application of harness training patterns using the interval and repetition methods did not provide a significant increase in power endurance ability [13]. Because in the comparison between the two training methods (interval and repetition) through harness training, weight training is not given specifically. According to experts, if you want to increase explosive power ability, you must go through specific weight training and aim at maximum strength through intramuscular coordination of muscle groups (neural activation) to produce more explosive power.
- 2) The results researched that the exercise method using circuit training conducted for 6 weeks can increase agility. Circuit training exercises with the ball were more effective at increasing endurance, agility, and speed in this study [18].
- 3) The interval training method influences increasing the aerobic endurance ability of futsal players [17]. Interval training is a form of exercise used to increase aerobic endurance, train beginner techniques, and train tactics. Interval training is meant by the training load given to athletes to have the following characteristics: a) large volume of training load b) low or medium intensity of training load, c) long rest period, and d) frequency and rhythm of movement slightly and long. In addition to the provision of exercise methods, aerobic endurance is also influenced by nutrition and motivation to exercise [17]. This is because there is a positive and significant relationship between calorie intake, lifestyle, physical activity, and nutritional status to athlete stamina. This means that overall the findings of the research results through this literature review recommended that a physical condition training model is needed in futsal games.

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References

1. Santoso, G. Ilmu Faal Olahraga, Fungsi Tubuh Manusia Pada Olahraga, 2005.
2. Moura, D., Oliveira da Silva, T., Garcia, V., & Santos, J. Effects of a functional training program in physical qualities of futsal athletes. *Revista Brasileira De Futsal E Futebol*, 124–129, 2018.
3. Yuniarto, A., Supriyadi, S., & Sudjana, I. N. Pengembangan Media Pembelajaran Berbasis Mobile Learning Teknik Dasar Dan Peraturan Permainan Futsal. *JPJOK (Jurnal Pendidikan Jasmani, Olahraga Dan Kesehatan)*, 2(1), 51–62, 2018. <https://doi.org/10.33503/jpjok.v2i1.188>.
4. Bass, R. W., Brown, D. D., Laurson, K. R., & Coleman, M. M. (2013). Physical fitness and academic performance in middle school students. *Acta Paediatrica, International Journal of Paediatrics*, 102 (8), 832–837, 2013. <https://doi.org/10.1111/apa.12278>
5. Fachrezzy, F., Hermawan, I., Maslikah, U., Nugroho, H., & Sudarmanto, E. Profile Physical Fitness Athlete of Slalom Number Water Ski. *International Journal of Educational Research & Social Sciences*, 2(1), 34–40. <https://doi.org/10.51601/ijersc.v2i1.29>, 2021.
6. Hardiansyah, S. Kondisi Fisik Adalah Salah Satu Prasarat Yang Sangat Diperlukan Dalam Setiap Usaha Peningkatan Prestasi Seorang Atlet, Bahkan Dapat Dikatakan Dasar Landasan Titik Tolak Suatu Awalan Olahraga Prestasi. *Jurnal Menssana*, 3(1), 117–123, 2018.
7. Jariono, G., Subekti, N., Indarto, P., Hendarto, S., Nugroho, H., Fachrezzy, F., Surakarta, U. M., Sebelas, U., Surakarta, M., & Jakarta, U. N. (2020). Analisis Kondisi Fisik Menggunakan Software Kinovea Pada Atlet Taekwondo Dojang Mahameru Surakarta. *Transformasi: Jurnal Pengabdian Masyarakat*, 16(2), 133–144, 2020. <https://doi.org/10.20414/transformasi.v16i2.2635>
8. Pratama, T., & Umar. TINJAUAN TINGKAT KONDISI FISIK ATLET SEPAKBOLA PORMA FC SIJUNJUNG. *Jurnal Patriot*, 2, 549–564, 2020
9. Bompa, T., & Haff, G. G. *Sport psychology*. Springfield: Blackwell Publishing, 2009.
10. H. Indrawira, U. Maslikah, G. Jariono, H. Nugroho, I. H. Pelatihan dan Penyusunan Latihan Fisik Pada Anggota Komando Strategis Angkatan Darat (KOSTRAD). *JURNAL ALTIFANI: Penelitian Dan Pengabdian Kepada Masyarakat*, 1(1), 27–34, 2021. <https://doi.org/10.25008/altifani.v1i1.115>
11. Puspitasari, N. Faktor Kondisi Fisik Terhadap Resiko Cedera Olahraga Pada Permainan Sepakbola. *Jurnal Fisioterapi Dan Rehabilitasi*, 3(1), 54–71, 2019. <https://doi.org/10.33660/jfrwhs.v3i1.34>
12. Mashud, & Karnadi, M. Optimalisasi Kelincahan Pemain Futsal Pra PON Kalimantan Selatan Melalui Latihan Ladder Drill. *Jurnal Multilateral Universitas Lampung Mangkurat*, 14(1), 44–53, 2015.
13. Mulyawan, R., Sidik, D. Z., & Hidayat, N. Dampak Penerapan Pola Pelatihan Harness Menggunakan Metode Interval Dan Repetisi Terhadap Peningkatan Kemampuan Power Endurance Tungkai. *Jurnal Sains Keolahragaan Dan Kesehatan*, 1(1), 1, 2016. <https://doi.org/10.5614/jskk.2016.1.1.1>
14. Sumarsono, A. Pengaruh Metode Latihan Agility Hurdle Drill Dan Agility Leader Terhadap Koordinasi Kaki Anggota Ukm Futsal Universitas Musamus Merauke. *Altius : Jurnal Ilmu Olahraga Dan Kesehatan*, 6(1), 1–8, 2019. <https://doi.org/10.36706/altius.v6i1.8220>.

15. Mubarakah, N. Pengaruh Circuit Training Terhadap Peningkatan Daya Tahan Otot Tungkai Dan Kelincahan Pada Pemain Futsal Beka United Futsal Academy. *Pendidikan Jasmani Indonesia*, 33(2), 45, 2017.
 16. Syarif, S., & Suardi, S. Pengaruh Metode Latihan Dan Koordinasi Mata-Kaki Terhadap Kemampuan Menggiring Bola Pada Permainan Sepakbola Siswa SMA Negeri 1 Anggeraja Kabupaten Enrekang. *SPORTIVE: Journal of Physical Education, Sport and Recreation*, 2(2), 18, 2019. <https://doi.org/10.26858/sportive.v2i1.9399>
 17. Sepriadi, Arsil, & Mulia, A. D. Pengaruh Interval Training Terhadap Kemampuan daya tahan aerobik pemain futsal. *Jurnal Penjakora*, 5(2), 121–127, 2018.
 18. Rahman, F. J. Peningkatan Daya Tahan, Kelincahan, dan Kecepatan pada Pemain Futsal: Studi Eksperimen Metode Circuit Training. *Jurnal SPORTIF : Jurnal Penelitian Pembelajaran*, 2018. https://doi.org/10.29407/js_unpgri.v4i2.12466.
 19. Tang. *Jurnal Pendidikan Kepelatihan Olahraga. Pendidikan Kepelatihan Olahraga*, 12(2), 1–13, 2020.
 20. Rahim, A. F. (2020). Pengaruh Ladder Drill Exercise Terhadap Kecepatan Dan Kelincahan Pemain Futsal. *Jurnal Sport Science*, 10(2), 153, 2020. <https://doi.org/10.17977/um057v10i2p153-157>
 21. Rahim, A. F., Rahmanto, S., Dirgantari, B. F., & Lubis, Z. I. Pengaruh Jack Knife Stretching Terhadap Kelincahan Pemain Futsal. *Jurnal Sport Science*, 11(2), 115, 2021. <https://doi.org/10.17977/um057v11i2p115-119>
 22. Indra Fahlefi, P. M., Multazam, A., Rahmanto, S., & Rahim, A. F. Perbandingan Shuttle Run Exercise Dan Ladder Drill Exercise Terhadap Kelincahan Pada Pemain Futsal. *Physiotherapy Health Science (PhysioHS)*, 2(2), 62–68, 2021. <https://doi.org/10.22219/physiohs.v2i2.15195>
- Wahid, “Pentingnya media pembelajaran dalam meningkatkan prestasi belajar,” *Istiqra'*, vol. V, no. 2, 2018.

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