



## The Influence of Training on Basic Extracurricular Futsal Heading Skills at Santo Paulus Martubung High School, Medan City in 2024

**Manumpan Pasaribu 1\***

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Medan,  
Indonesia

**Dicky Hendrawan 2**

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Medan,  
Indonesia

### Abstract.

#### Background

The futsal extracurricular activities at Santo Paulus Martubung High School in Medan City revealed that there are no training methods to improve heading skills, and students also lack good heading skills.

#### Objectives

This research aims to determine the effect of training on basic extracurricular futsal heading skills at Santo Paulus Martubung High School, Medan City in 2024. The subjects in this research were 15 students participating in extracurricular futsal at Santo Paulus Martubung High School, Medan City in 2024.

#### Methods

The design in this study uses a pre-test and post-test design model which aims to see the effect of training as the independent variable and basic heading skills as the dependent variable. The instrument for this research is the basic technical skills of heading in the game of futsal and to measure this a heading test (heading the ball) is used. The treatment carried out in training is training for heading the ball in a fixed position and training for heading the ball in a changing position.

#### Results

From the results of the research and discussion, it can be seen that during the pre-test the average value was 5.24 and the average value for the post-test data was 5.59. These results show that the heading skills of students participating in extracurricular futsal at Santo Paulus Martubung High School, Medan City, after practicing using a variety of heading exercises, increased by 0.35 or 6.67% from the pre-test. In this case it can be said that the influence given by variations in heading training is 6.67%.

#### Conclusion

Based on the results of data analysis, hypothesis testing and discussion that has been put forward, the conclusion of this research is that there is a significant influence of variations in heading training on heading skills in students participating in futsal extracurriculars at Santo Paulus Martubung High School, Medan City, namely 6.67%.

**Keywords** Practice, Heading, Variation Practice.

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\*Correspondence: [manumpan@gmail.com](mailto:manumpan@gmail.com)

Correspondence **Manumpan Pasaribu**

Correspondence Author Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Medan, Indonesia

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## INTRODUCTION

Sports activities have become part of a healthy lifestyle for Indonesian people. There are various ways to achieve a healthy life, one of which is through sports. In Indonesia, one sport that has begun to gain many enthusiasts from all levels of society—children, teenagers, adults, and the elderly besides soccer is futsal. Futsal can be categorized as a developing sport that is gradually becoming embedded in the lives of Indonesian people.

Futsal is almost similar to soccer when viewed from the basic techniques of the game. In general, futsal is nearly the same as soccer, as it is played from foot to foot. The differences lie in the size of the field, the number of players, the weight of the ball, and the rules of the game, including the duration of the match in futsal. Futsal trains players to always be ready to receive and pass the ball quickly under opponent pressure and in limited space. By playing futsal, players can develop their abilities effectively.

The development of this sport has expanded into the field of education, from elementary schools to universities. The high enthusiasm in the education sector can be seen from the growth of extracurricular activities in schools to accommodate students' talents in futsal. Since it does not require a large field like a soccer field, futsal courts have started to appear in schools and are being utilized effectively. In many cases, basketball must share time and space with futsal in some schools. Some schools even have indoor futsal courts.

Futsal has become a favorite sport in most schools because it can be played by many students. For example, during school Independence Day celebrations, inter-class futsal competitions often become the

highlight of the event among various sports and arts competitions. With the increasing number of futsal events from the school level to the national level, this sport has developed rapidly and gained widespread popularity. Schools have begun to focus on futsal to enhance their reputation through this sport. It is known that many favorite schools in Medan, both public and private, prioritize futsal as one of their extracurricular activities. In addition, some schools also focus on educating students to become futsal athletes. Schools can serve as places to nurture future professional futsal players.

At school age, motor development progresses rapidly, enabling students to develop their skills and talents. Therefore, efforts made by schools in fostering talent in futsal are essential. Extracurricular activities are activities conducted outside regular school hours aimed at developing students' talents and interests. These activities provide opportunities for students to choose and develop their potential freely. Students can also improve their skills in specific sports without being limited by regular class time.

In futsal extracurricular activities held in the afternoon, students gain several benefits. They can increase their practice, especially in heading techniques, and improve their skills in performing various heading techniques through training and participation in extracurricular programs at school.

The same applies to SMA Santo Paulus Martubung, one of the schools in Medan established in 2002. However, the school has not yet achieved the desired accomplishments due to a lack of training motivation and insufficient training methods. The basic techniques practiced include running, passing, controlling, heading, shooting, and dribbling. Although the school schedules futsal training three times a week Monday, Wednesday, and Friday from 3:00 p.m. to 4:30 p.m. the futsal extracurricular activities at SMA Santo Paulus Martubung in Medan have not achieved optimal results. This can be seen from the fact that the futsal team has not yet won championships in several competitions they have participated in.

Based on the author's observations during futsal extracurricular activities at SMA Santo Paulus Martubung in Medan, it was found that there is no specific training method implemented to properly improve heading skills, and the students still lack good heading ability. As a result, students appear fearful and hesitant to perform the heading technique due to insufficient practice. Proper contact between the head and the ball is still not visible, and body and head movements in directing or transferring the ball using the heading technique are still far from expectations.

Ideally, the basic heading technique should be developed in the game to anticipate high passes from opponents. In addition, during attacking situations such as corner kicks, the heading technique can be maximized to score goals.

## METHOD

### Research Design

The experimental method is a research method used to find the effect of certain treatments on others under controlled conditions. The quote explains that experimental research is always carried out with the intention of seeing the effects of a treatment.

### Participant

The population referred to in this study is to strengthen and provide information in accordance with the research objectives. The population in this study was 15 students participating in the futsal extracurricular activity at Santo Paulus Martubung High School, Medan City, in 2024.

Generalizations consist of objects/subjects with certain qualities and characteristics determined by the research to be studied and then conclusions drawn. Based on the above definition, it can be concluded that the population is the entirety of the subjects studied. The population in this study was all 15 students participating in the futsal extracurricular activity at Santo Paulus Martubung High School, Medan City, in 2024.

### Data Analysis

The analytical technique in this study is quantitative analysis, used to address dynamic problems using numerical data. The data obtained will be analyzed statistically using a correlation test to select candidate independent variables that are supported by the data. To determine the effect of heading training on basic futsal heading skills in extracurricular activities at SMA Santo Paulus Martubung, Medan City in 2024, Product Moment analysis was used.

## RESULTS AND DISCUSSION

### Results

The description of research data serves to facilitate the reading of the research data. The description of the research data includes pre-test and post-test data from the research conducted. This chapter will present the research data, from the pre-test and post-test data of the heading skills of students participating in the futsal extracurricular at SMA Santo Paulus Martubung, Medan City. The following is a description of the data obtained:

#### 1. Heading Skills Pre-Test

The description of the pre-test data is based on data obtained from the results of the pre-test measurement test, or before the treatment was administered. The results of the descriptive analysis of the pre-test data on heading skills of students participating in the futsal extracurricular activity at SMA Santo Paulus Martubung, Medan City, obtained a minimum score of 3.9; a maximum score of 6.4; a mean score of 5.24; a median of 5.0; a mode of 4.8; and a standard deviation of 0.825. The following is a frequency distribution table.

Table 1. Frequency Distribution of Pre-Test Data

No	Class Interval	Classification	Frequency	Percentage
1	> 8,2 m	Very well	-	0%
2	6,7 – 8,1 m	Good	-	0%
3	5,2 – 6,6 m	Currently	6	40%
4	3,7 – 5,1 m	Not enough	9	60%
5	< 3,6 m	Very less	-	0%
<b>Amount</b>			<b>15</b>	<b>100%</b>

#### 2. Post-Test Heading Skills

The description of the post-test data is based on the data obtained from the post-test measurement results, or before the treatment was administered. Analysis Results Descriptive post-test data on the heading skills of students participating in the futsal extracurricular activity at Santo Paulus Martubung High School in Medan City showed a minimum score of 4.3; a maximum score of 6.7; a mean score of 5.59; a median score of 5.45; a mode score of 5.4; and a standard deviation score of 0.778. The following is a frequency distribution table.

Table 2. Frequency Distribution of Post-Test Data

No	Class Interval	Classification	Frequency	Percentage
1	> 8,2 m	Very well	-	0%
2	6,7 – 8,1 m	Good	1	6,67%
3	5,2 – 6,6 m	Currently	9	60%
4	3,7 – 5,1 m	Not enough	5	33,33%
5	< 3,6 m	Very less	-	0%
<b>Amount</b>			<b>15</b>	<b>100%</b>

### Discussion

This study aims to determine the effect of heading training variations on the heading skills of students participating in the futsal extracurricular program at SMA Santo Paulus Martubung in Medan. The results of the study show that there is a significant effect of heading training variations on the heading skills of students participating in the futsal extracurricular program at SMA Santo Paulus Martubung in Medan.

The t-test analysis shows that the calculated t-value (t-count) is greater than the t-table value, indicating a significant difference between the pre-test and post-test results. This demonstrates that there is a

significant effect of heading training variations on the heading skills of the students. In the pre-test, the average score was 5.24, while in the post-test, the average score increased to 5.59. These results indicate that after practicing with heading training variations, the students' heading skills improved by 0.35 points, or 6.67%, compared to the pre-test results. Thus, it can be concluded that the effect of heading training variations was 6.67%.

Heading the ball is one of the fundamental techniques in futsal. It is used to pass the ball to teammates, provide assists, clear the ball from the goal area, and even score goals against opponents. According to theory, to be skilled in heading the ball in futsal, a player must be able to coordinate the body parts involved in the heading movement, and there are several techniques used in heading. Training with heading variations stimulates players to coordinate the body parts involved in the heading motion, thereby improving heading skills among students participating in the futsal extracurricular program at SMA Santo Paulus Martubung in Medan.

The research findings show that after undergoing training using heading variations, the students' heading skills increased significantly by 6.67% compared to before the training was administered. This is a very positive outcome for the development of futsal. It is expected that these findings can be applied in school extracurricular training activities, suggesting that heading practice should incorporate varied heading drills because they are highly effective in improving students' heading skills.

The effect of training using heading variations is considerable, amounting to 6.67%. This means that heading practice with varied drills is very effective and is recommended for broader application. As students' heading skills improve, their overall futsal playing ability will also improve, since heading is one of the basic skills in futsal. Therefore, it is recommended that futsal training programs include heading practice in addition to passing, ball control, and dribbling exercises.

## CONCLUSION

Based on the results of data analysis, hypothesis testing and discussion that have been presented in the previous chapter, the conclusion in this study is as follows: "there is a significant influence of variations in heading exercises on heading skills in students participating in the futsal extracurricular at SMA Santo Paulus Martubung, Medan City, namely 6.67%

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## AUTHOR CONTRIBUTION STATEMENT

This study was conceptualized and designed by Manumpun Pasaribu, who developed the research objectives and methodology, managed data collection, coordinated with participants, and supervised fieldwork at STOK Bina Guna Medan. Dicky Hendrawan performed data analysis, interpreted the findings, and contributed significantly to the preparation of the manuscript. All authors participated in the revision of the manuscript, approved the final version for submission, and take full responsibility for the integrity and accuracy of the work.

## CONFLICT OF INTEREST AND FUNDING

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

## REFERENCES

Achwani, M. (2014). Peraturan permainan futsal 2014/2015. Jakarta: Manajemen Sport Utama.

- Afriansyah. (2009). "Penambahan core stability exercise pada lari zig-zag lebih meningkatkan agility pada pemain futsal". Skripsi, sarjana tidak diterbitkan. Universitas Esa Unggul, Jakarta.
- Akuthota, V., Ferreiro, A., Moore, T., Fredericson, M. (2008). Core stability exercise principles. *Curr Sports Med Rep*, 7(1), 39-44. Aly, S. A., & Abanour, Effect of core stability exercise on postura stability in children with down syndrome. *International Journal of Medical Research & Health Sciences*. Vol. 5. No: 10. 2016:214.
- Amiq, F. (2014). *Futsal, Sejarah, Teknik Dasar, Persiapan Fisik, Strategi, dan Peraturan Permainan*. Malang: Universitas Negeri Malang.
- Arikunto, S. (2006). *Prosedur Penelitian Suatu Pendekatan Praktek*. Jakarta: PT Bina Aksara.
- Bompa, T.O & Haff, G. (2009). *Periodization Theory and Methodology of Training*. USA: Sheridan Books.
- Budiwanto, S. (2013). *Metodologi Latihan Olahraga*. Malang: Penerbit Universitas Negeri Malang (UM PRESS).
- Catherine, S. T. (2006). Increasing vertical jump height in high school female volleyball players through the use of plyometric training and recovery. Tesis master, tidak diterbitkan, of California University of Pennsylvania in partial. Chu, D.A. (1992). *Jumping into plyometrics*. California: Leisure Press. Champaign, Illinois.
- Contreras, B. (2014). *Body Weight Strenght Training Anatomy*. United Stade: Human Kinetic.
- Hadiwidjaja, S. (2004). *Anatomi Extremitas*. Surakarta: Sebelas Maret University Press.
- Halim, S. (2009). *1 hari pintar main futsal*. Yogyakarta: Media Presindo. Harsono. (2015). *Kepelatihan Olahraga. (Teori dan Metodologi)*. Bandung: Remaja Rosdakarya.
- Hibbs, A. E; Thompson, K. G; French, D; Wrigley, A; & Spears, I. (2008). Optimizing performance by improving core stability and core strength. *Sport Med*, vol. 38, no. 12, pp. 995-1008. Hodges, P; Kaigle Holm; Holm, S; Ekstrom, L; Cresswell, A; Hansson, T;
- Thorstensson, A. (2003). Intervertebral stiffness of the spine is increased by evoked contraction of transversus abdominus and the diaphragm: in vivo porcine studies. *Spine*, vol. 28, no. 23, pp. 2594-2601.
- Ismoko, A.P & Putro, D.E. (2017). Pengaruh Metode Latihan dan Koordinasi Terhadap Power Tungkai Atlet Bola Voli. *Jurnal Penelitian Pendidikan*, Vol. 9, Nomor 1, hlm. 1311-1374
- Jaya, A. (2008). *Futsal: Gaya Hidup, Peraturan, dan Tips-tips Permainan*. Yogyakarta: Pustaka Timur.
- Khamooshi, R., Mohammadi, S. M., Rahnama, N., & Zalani, F. R. (2016). Comparing the effects of simultaneous eight-week stretching/strengthening trainings with core stability exercises on the flat foot deformity of 9 to 13. *International Journal of Musculoskeletal Pain prevention Year Old Female Students*. Vol. 1. No: 4. 2016:149-156. Kibler, B.W., Press, J., & Sciascia, A. (2006). The role of core stability in athletic function. *Sports Medicine*, 36 (3), 189-198.
- Lhaksana, J. (2011). *Taktik & Strategi Futsal Modern*. Jakarta: Penebar Swadaya Group.
- Nala, N. (2011). *Prinsip Pelatihan Fisik Olahraga*. Denpasar: Komite Olahraga Nasional Indonesia Daerah Bali.
- Navalta, W. James and Hrcir P. Stephen. (2007). Core stabilization exercises enhance lactate clearance following high intensity exercise. *Journal of Strength and Conditioning Research*. Volume 1 No 2.

- Noviada, G. (2014). Metode Latihan Taktis Passing Berpasangan Statis dan Passing Sambil Bergerak Terhadap Keterampilan Tehnik Dasar Passing Control Bola Futsal. *Jurnal Olahraga Universitas Ganesha*, Volume 1 No 2.
- Nurdiansyah & Susilawati. (2018). Pengaruh latihan plyometric hurdle hopping terhadap kemampuan daya ledak otot tungkai. *Multilateral: Jurnal Pendidikan Jasmani dan Olahraga*, Volume 17 No 1.
- Pramita, I, Setiawan, Zuhri, S. (2017). Pengaruh latihan stabilisasi postural terhadap keseimbangan statis dan dinamis pada pasien pasca stroke. *Jurnal Kesehatan Terpadu*, 1 (1) : 19 – 24.
- Raharjo, F.A. (2016). Pengaruh pemberian core stability exercise untuk meningkatkan kekuatan otot tungkai dan performa atlet bola voli putra umur 18-25 tahun di Surakarta. *Publikasi Ilmiah*. Universitas Muhammadiyah Surakarta.
- Razak, A. (2011). Pengaruh latihan hurdle jump dan latihan knee tuck jump terhadap peningkatan daya ledak tungkai pada mahasiswa FIK UNM Makassar. *Jurnal Kepelatihan Olahraga*, Volume 3, No 3.
- Sholeh, M. (2013). Perbedaan pengaruh metode latihan plyometric dan berbeban terhadap peningkatan smash forehand bulutangkis ditinjau dari motor ability. *Jurnal Ilmiah SPIRIT*, Vol. 13 No. 1. Singh, A.B. (2012). *Sport training*. Delhi: Chawla Offset Printers.
- Smooth, Smith. (2005). Core stability exercise. Diakses tanggal 10/06/2010 Available from: <http://hubpages.com/hub/core-stability-exercise>.
- Sudaryanto & Erna. (2009). Perbedaan pengaruh quadiceps bench exercise antara beban 5 RM dan 10 RM terhadap peningkatan daya ledak tungkai. *Skripsi*, tidak diterbitkan, Makassar: Ikatan Fisioterapi Makassar.
- Sugiyono. (2007). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sugiyono. (2011). *Statistik untuk Penelitian*. Bandung: Alfabeta. Suharjana. (2013). *Kebugaran Jasmani*. Yogyakarta. Jogja Global Media.
- Sukadiyanto. (2011). *Pengantar Teori dan Metodologi Melatih Fisik*. Bandung: CV Lubuk Agung.
- Sukardi. (2015). *Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Susworo D. M, Saryono, & Yudanto. (2009). Tes Futsal FIK Jogja. *Jurnal Iptek dan Olahraga*. VOL. 11, No.2.
- Tenang, J. D. (2008). *Mahir Bermain Futsal*. Bandung: IKAPI.
- Thompson, K.G. (2008). Optimizing performance by improving core stability and core strength. *Sports Med*. 2008;38 (12):995-1008.
- Triansyah, A., Burhanudin, B., & Haetami, M. (2020). "Pengaruh Heading Game Terhadap Ketepatan Heading Sepak Bola Di Club Gastra Kabupaten Kayong Utara." *Riyadhoh: Jurnal Pendidikan Olahraga*
- Widiastuti. (2015). *Tes dan Pengukuran Olahraga*. Jakarta: PT RajaGrafindo Persada.
- Wirawan. (2009). *Penyusunan 50 teknik tes keterampilan 50 teknik futsal pada mahasiswa DKI Jakarta*. Skripsi, sarjana tidak diterbitkan. Universitas Negeri Jakarta, Jakarta.
- Yuliana, S. (2014). *Pelatihan kombinasi core stability exercise dan ankle strategy exercise tidak lebih meningkatkan dari core stability exercise untuk keseimbangan statis pada mahasiswa S1 Fisioterapi Stikes 'Aisyiyah Yogyakarta*. Tesis, tidak diterbitkan. Pascasarjana Program Studi Fisiologi Kesehatan Universitas Udayana