



## **Futsal Application Products: WEB based Integrated System (FTS)**

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### **Abstract**

The goal of this project is to create a web-based futsal integrated system (FTS) application. This application will function as a database for clubs affiliated with the North Sumatra district and province futsal associations. The present study employs a research and development process, utilizing nine research steps to build products that aim to address current database system difficulties. Group I test results on 15 trial samples with a total score of 3.90 divided by the maximum score resulted in a presentation of 78.33% with the eligible criteria. Group II trials on 30 Medan City Askot administrators showed that the effectiveness aspect was 93%, the quality aspect was 93.33%, and the product satisfaction aspect was 95% with an average percentage of 93.77% in the "Very Appropriate" category. These results were the product of two stages of the research project. The conclusion is that AFP North Sumatra can use this WEB-based system integrated futsal application product as a database to track the number of athletes, competitions, scheduling, club activities, and rankings for official tournaments held under its sponsorship. In addition, the public can learn about the size of Futsal's population and development, particularly in North Sumatra. application of information and technology to help realize the goals of the rapidly expanding globalization period.



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## INTRODUCTION

Every human being essentially needs physical activity in order to preserve their physical condition and overall health throughout their lives. On the other hand, people have to work longer hours these days. In these circumstances, playing sports has become a rare activity. Actually, since maintaining one's health is crucial to a person's quality of life, exercise is actually necessary to do so. Participating in competitive activities is what makes sports so important. Sports do not discriminate based on factors such as gender, age, race, religion, ethnicity, or class. Sports participation is open to everybody as long as it doesn't put oneself or others at risk. As a result, everyone can play and take part in sports that have different adapted regulations (Supriadi, n.d.).

Football is a popular sport among a wide range of enthusiasts, including adults and children. From those who merely want to work hard to those who genuinely want to succeed on the football field. Saying that football is the most popular sport in the world is not hyperbole nearly everyone is aware of the sport. It would also not be absurd for someone to believe that football is the greatest sport in the world. Futsal is one example of how the game of football has changed in tandem with the modern era's rapid development. (Danurwindo et al., 2017) claims that during the Uruguay World Cup in 1930, a coach from Argentina by the name of Juan Carlos Ceriani invented futsal for the first time in Montevideo, Uruguay. *Futbol de salao* (Portuguese) and *Futbol Sala* (Spanish), which translate to "indoor football," were the original names for the sport of futsal. It was from these two languages that futsal, a more international word, originated. Futsal gained a lot of

popularity in Indonesia in 2002 as a result of the decline of wide open spaces, particularly in larger towns. Futsal is a tool for honing skills related to dribbling, kicking, heading, and attacking. Futsal helps kids and teens acquire the abilities and natural instincts needed to play football. Futsal and football vary notably in that futsal uses a smaller field than football. Futsal is a sport that is now growing in many different towns and areas. The necessity for city dwellers to enjoy the very popular game of football led to the inception of futsal in many large cities. However, playing indoor football or futsal sports is a solution because there isn't much infrastructure for football sports (Lalu Hulfian, 2022; Widodo Agung, 2023).

Many different types of people now enjoy playing futsal as a sport (Sintaro et al., 2020)). Similar to football, but with fewer players five versus five futsal is played (Mesnan et al., 2019) This sport can be played indoors on a field that is smaller than a football field that is level and even. There are currently a lot of indoor futsal playing fields available in Indonesia. This implies that this sport can be performed in both sunny and cloudy conditions, at any time of day morning, afternoon, evening, or night. Because of these qualities, futsal has been able to gain popularity in Indonesia (Danurwindo et al., 2017) (Nurkadri & Kholil, 2021).

As we approach the era of globalization, people are accustomed to using ever-more-advanced technology to simplify a variety of tasks. The internet is a technology that the world is currently familiar with. Anyone can communicate with individuals anywhere in the globe by using the internet. Anyone may communicate and acquire the different types of information they require at any time, anyplace, thanks to the internet. The

internet has made it easier for people to conduct business.

The quantity of tournaments and competitions being held, both scheduled (official) contests and unofficial competitions, is indicative of the futsal sports' rapid growth. Aside from that, a lot of futsal clubs have formed, particularly in North Sumatra, and they are spreading from age groups in elementary, middle, and high school to those in senior high school. This has given rise to a new attitude in the advancement and success of futsal sports, but As futsal clubs and matches proliferate, occurring nearly weekly, it would be ideal if the parent sport branch or organization overseeing futsal, like the North Sumatra Province AFP (Federation Futsal Association), made a significant advancement to document every futsal club in the district or ASKAB futsal member city. Up until now, data collection has been restricted to the results of official events, like the Nusantara League, which is conducted annually in both regencies and cities, followed by the province of North Sumatra's final round. Aside from that, the issue facing the competitors in the Nusantara League official competition held annually is the proliferation of new teams.

The Nusantara League, both the District and City rounds, consistently produce new futsal clubs that compete in the competition, according to the findings of observations made by researchers at AFP North Sumatra. Aside from that, the data collection is not based on technology, which is noteworthy given the prevalence of technology use in this era of digitalization. In addition, a lot of player movements have not been accurately documented, which frequently results in internal disputes between the recruiting clubs. This has an effect on the information and services that are

developed. Next, lacking a database of members with district or city level AFP voting rights is deemed to be the most pressing issue facing the North Sumatra AFP. It is best for all tournaments held, from age-level tournaments to mushrooming tournaments, to have data collected. By doing so, the AFP is able to control the tournament well and schedule so that all matters under the auspices of the North Sumatra AFP can be recorded properly through the use of science and technology. This is why the proliferation of tournaments or futsal competitions outside the AFP is also very bad for the management system.

The researchers' premise is that by utilizing science and technology in the futsal sport, it is possible to build a database that will aid the North Sumatra AFP in managing the organization, particularly in terms of scheduling competitions and keeping an eye on the more frequent competitions that take place outside of the official ASKAB-ASKOT and AFP channels. For all futsal activity demands, researchers provide an application-based product, integrated administrative services, and data based on a digital platform. There are several uses for this FTS (Futsal Integrated System) program application. This application serves as a futsal membership database and is intended to serve as a database for AFP North Sumatra to track the number of participants, matches, schedules, club activities, and standings in official events conducted under the organization's sponsorship. In addition, the public can learn about the size of Futsal's population and development, particularly in North Sumatra. This web-based program was created with the intention of serving as a helpful tool for futsal referees in North Sumatra, coaches, and athletes to assess prospective resources and determine the amount of quantitative data. In addition, FTS serves as a governance

and management administration service system for futsal organizations, ranging from AFP Indonesia to ASKAB/ASKOT, AFP North Sumatra, and clubs. The Futsal Integrated System (FTS) application program will offer a full suite of services pertaining to different futsal activities. Applications pertaining to match systems, athletics, clubs, officials, and coaches, as well as other administrative and organizational governance tasks, are among those connected to membership database administration.

Research on the usage of technology through the FTS application was conducted using a number of earlier studies on the use of WEB-based apps in sports (Darmawan & Sedyono, n.d.; Ferdian et al., 2021). From club level to AFP North Sumatra to AFP Indonesia, this program is highly helpful and efficient for managing modern organizational governance, coaching, and development. In addition, as information and technology advance in the industrial era 4.0, nearly every aspect of life including organizational management needs to employ digital information technology networks and digitalize communications. Furthermore, the FTS is thought to have occurred concurrently with the passing of Law No. 11 of 2022 regarding Sports. It is a significant advancement in sports, particularly with regard to the application of digitization, as it functions flawlessly and can be recorded.

## **METHODS**

This study uses a qualitative research design, and any development studies that are employed in the research must be grounded in the topic that has been raised. Even though the research problem remains the same, the variables raised in the problem's background will

need to be developed, along with a strategy to address them. Nevertheless, there are occasions when a researcher can select one or more research development types to use in order to solve the problem. (Okpatrioka, 2023; prof. dr. sugiyono, 2010), which consists of the following processes, is the model design used in this WEB-based integrated system (FTS) futsal application product development research.

### **Information gathering and research (preliminary study)**

Researchers use observational techniques to conduct preliminary investigations and search for prior research through preliminary study results to determine the potential and challenges in developing WEB-based integrated system (FTS) futsal application products.

### **Research Planning (Planning)**

For all futsal activity demands, researchers provide an application-based product, integrated administrative services, and data based on a digital platform. There are several uses for this FTS (Futsal Integrated System) program application. This application serves as a futsal membership database and is intended to serve as a database for AFP North Sumatra to track the number of participants, matches, schedules, club activities, and standings in official events conducted under the organization's sponsorship. In addition, the public can learn about the size of Futsal's population and development, particularly in North Sumatra. This web-based program was created with the intention of serving as a helpful tool for futsal referees in North Sumatra, coaches, and athletes to assess prospective resources and determine the amount of quantitative data. In addition, FTS serves as a governance and management administration service system for futsal organizations, ranging

from AFP Indonesia to ASKAB/ASKOT, AFP North Sumatra, and clubs. The Futsal Integrated System (FTS) application program will offer a full suite of services pertaining to different futsal activities. Applications pertaining to match systems, athletics, clubs, officials, and coaches, as well as other administrative and organizational governance tasks, are among those connected to membership database administration.

### **Create the Product's Initial Design Development**

This stage involves the creation of the first product, which is a WEB-based integrated system (FTS) futsal application product. The researcher conducted a thesis proposal seminar in addition to consulting with experts in test and measurement during the product's development. In order to ensure that the product development that the researchers produced could be used and had widespread benefits, this was done to review the references and tester suggestions.

### **Main Product Revision**

Following the design of the test and measurement apparatus, the researcher improved the design in consultation with the Asprov officials, academic experts, and IT test experts. The evaluations' findings and the experts' recommendations will be incorporated into future iterations of the WEB-based integrated system (FTS) futsal application products.

### **Primary Field Test**

Currently, small group trials involving a total of 15 people and large group trials involving a total of 30 subjects will be conducted as part of the field trial stage. The researcher has selected the participants who will

participate in this trial. This test compares the efficacy and efficiency of the researchers' developed futsal application product, which is a WEB-based integrated system (FTS).

### **Operational Product Revision**

In this phase, the product is revised based on findings from researchers' small-scale testing. Experts are also provided access to the findings of this small-scale trial in order to assess the degree of efficacy and utility of the test and measuring instruments as well as identify any potential flaws that may exist and can be fixed.

### **Large-scale trials, or operational field testing**

At this point, thirty study subjects were used in extensive field studies that the researchers had devised. Data was then gathered through direct trials with test tools that the individuals had been given. The final revision of the feasibility test results is the fourth step in the process. Making changes to the completed WEB-based integrated system (FTS) futsal application product in response to feedback from IT test specialists, futsal asprov, academic experts, and field testing results. The purpose of this is to refine the product that the researchers are creating.

Owing to the limitations of the researchers, the research was only able to evaluate the phase II trial results. At this point, the integrated futsal application system (FTS) product development was revised and validated based on recommendations from academic experts, IT test experts, and futsal asprov. internet-based.

## **RESULT**

This development research aims to produce a research product based on

innovation that is efficient and effective. The meaning of effective is a product that researchers use to make it easier for futsal sports players regarding various futsal activities, meaning that researchers design web-based products that are used to provide services related to membership database management (athletes, clubs, referees and coaches), applications regarding match systems and administrative and other organizational governance activities. Meanwhile, efficiency means that the product that the researchers designed can be seen by anyone because it uses an internet-based web system that can be accessed by anyone, anywhere, at any time to see developments related to various futsal activities.

#### **Futsal Integration System (FTS) Web-Based Application Data Gathering**

The quantity of tournaments and competitions being held, both scheduled (official) contests and unofficial competitions, is indicative of the futsal sports' rapid growth. Aside from that, a lot of futsal clubs have formed, particularly in North Sumatra, and they are spreading from age groups in elementary, middle, and high school to those in senior high school. This has given rise to a new attitude in the advancement and success of futsal sports, but As futsal clubs and matches proliferate, occurring nearly weekly, it would be ideal if the parent sport branch or organization overseeing futsal, like the North Sumatra Province AFP (Federation Futsal Association), made a significant advancement to document every futsal club in the district or ASKAB futsal member city. Up until now, data collection has been restricted to the results of official events, like the Nusantara League, which is conducted annually in both regencies and cities, followed by the province of North

Sumatra's final round. Aside from that, the issue facing the competitors in the Nusantara League—an official competition held annually is the proliferation of new teams.

#### **Integrated System (FTS) Web-Based Futsal Application Development**

The researcher aims to develop efficient and effective innovations based on the findings of observations and needs analysis that have been stated. Effective refers to a product that researchers use to simplify various futsal activities for players of the sport. Specifically, effective refers to the creation of web-based products by researchers that offer services related to managing membership databases (athletes, clubs, referees, and coaches), match systems applications, and administrative and other organizational governance tasks. In the meantime, efficiency means that anybody may view the product the researchers produced because it makes use of an internet-based online system that anyone can access at any time and from any location to view updates about different futsal activities.

#### **WEB-Based Integrated System (FTS) Futsal Application Product**

The product mechanism for the WEB-based Futsal Integrated System (FTS) application is <http://databasefutsal.wuaze.com>. what the researchers designed is as follows:



**Figure 1.** Home Page of the Web-Based FTS Application

Implementation Method: Futsal players, especially North Sumatra, log in via a Web-based application, then enter the dashboard menu, and in this menu there are several menu options. Futsal sports people can see various information related to the development of futsal sports, especially in North Sumatra.

Implementation procedures for logging into the application  
<http://databasefutsal.wuaze.com/>

1. User Admin Access Rights
2. Users must create an account first on the register page.
3. Then to enter the application you have to go through the login menu.
4. With the username and password that was created previously.
5. Passwords can be researched by the user.
6. On the Dashboard menu there are several features that can be accessed by the user.
7. Then the user will explore several features to find out developments related to futsal sports, especially in North Sumatra

### Trial Results and Research Findings

From 15 small group trial samples with a total score of 3.90 divided by the maximum score resulting in a presentation of 78.33% with the Eligible criteria. During phase I of the trial, the researcher found findings in the field regarding the web-based Futsal Integrated System application which the researcher outlined in table 1.

**Table 1. Research Findings**

No	Research Findings
1	To log in to the application menu you must use an internet network, so that the application responds quickly
2	To upload videos and photos of club profiles, coaches and players, it is best to compress the files first so that the KB

of the file you want to upload is not too large.

- 3 The results of the file you want to upload should be visible clearly.

Thirty Askot administrators from Medan City participated in phase II trials. The objective was to contribute to and evaluate the outcomes of trials conducted on samples in order to determine the degree of tool usefulness and the efficacy of the web-based Integrated Futsal System application, ensuring that it satisfied the requirements for being both theoretically and empirically feasible. The end result of the web-based system integrated futsal application is then improved using the data that was gathered as a foundation. Whether the web-based system integrated futsal application is appropriate for use and satisfies the requirements mentioned in the system integrated futsal application are the outcomes that can be achieved in the field following the completion of

Phase II trials. It is visible and categorized in the form of a questionnaire based on the outcomes of the trials that were conducted. The effectiveness aspect of the product is 93%, the quality aspect is 93.33%, and the satisfaction aspect is 95%, with an average percentage of 93.77% in the "Very Appropriate" category for use as a new method of inputting data into a web-based system integrated futsal application, according to the results of the large-scale trial data (phase II) on 30 Medan City Askot administrators.

### DISCUSSION

Futsal has grown in a number of places and towns. The necessity for city dwellers to enjoy the very popular game of football led to the inception of futsal in many large cities. However, playing indoor football or futsal sports is a solution

because there isn't much infrastructure for football sports.

Science and technology (S&T) have been advancing at an accelerated rate recently. The numerous new discoveries that are made throughout numerous scientific fields serve as a marker for this. Sports are an applied science, and as such, technology has an impact on how sports are performed. Achievement sports, according to (Nurkadri et al., 2023), are physical endeavors undertaken with the goal of reaching the highest levels of accomplishment. Achievement sports demand a great deal of assistance from many different fields in order to perform at their best. In order to facilitate the best possible training procedure, trainers and athletes in competitive sports use technology. Support for science and technology in sports has a significant impact on the accomplishments of athletes.

The statement "Achievement sports are carried out through a planned, tiered and sustainable coaching and development process with the support of sports science and technology" is found in Law No. 3 of 2005, Article 20, paragraph 3. According to this statement, science and technology have a significant impact on the advancement of national sporting achievements. The quantity of tournaments and competitions being held, both scheduled (official) contests and unofficial competitions, is indicative of the futsal sports' rapid growth. Aside from that, a lot of futsal clubs have formed, particularly in North Sumatra, and they are spreading from age groups in elementary, middle, and high school to those in senior high school. This has given rise to a new attitude in the advancement and success of futsal sports, but In the midst of the rapidly expanding number of futsal clubs and matches, which take place virtually every week, it would be preferable if the futsal management organization or sports branch, like the North Sumatra Province

AFP (Federation Futsal Association), made a significant advancement in recording all futsal clubs in the district or ASKAB futsal member cities. Up until now, data collection has only been done with reference to the results of official events, like the Nusantara League, which is conducted annually in both regencies and cities before the province of North Sumatra holds its final round.

Aside from that, the issues faced by competitors in the Nusantara League which is actually a legitimate competition contested annually include the emergence of numerous new clubs. An appropriate structure is required to handle the current advancements in the futsal sport, which is currently undergoing rapid expansion in the North Sumatra Province. Players of futsal sports, particularly those in North Sumatra, can benefit from this integrated futsal system application, which can simplify things and give them access to the most information possible. This program for an integrated futsal system also serves as a database for AFP North Sumatra, which it uses to track the number of participants, events, schedules, club activities, and rankings in official tournaments run by AFP. Sumatra's north. In addition, the public can learn about the population's size and the growth of futsal, particularly in North Sumatera.

A computer system that is supported by multiple applications that are customized to meet the demands of the user. In addition, it is the application of system design to process data that makes use of the guidelines or features of a specific programming language, according to the Big Indonesian (Endriani et al., 2022) (Evan Savero et al., n.d.; Sianturi, 2016). A computer program designed to perform particular activities for the user is called an application. According to (Setia Hasibuan et al., 2023), "an application is the use in a computer of instructions or



statements which are arranged in such a way that the computer can process input into output". The purpose of the program is to facilitate users' processing of data so that it can be referred to more easily when making decisions. Applications are increasingly widely used by many types of people and groups, both social and business. Applications are used by numerous government organizations to gather reliable data for internal and census needs, and they are also used by multinational corporations in their business dealings. (Supriadi & Mesnan, 2022) (Imran Akhmad, 2017)"The Internet is a cooperative, self-operating public facility available to hundreds of millions of people worldwide. It is a global system of computer networks, a network for multiple networks. A web-based system can be developed from the internet and computer devices working together. Web-based systems, according to (Ilahi et al., 2021; Nurkadri et al., 2021), are programs or services that are hosted on a server and are accessible through a Web browser, enabling remote access via the internet from any location.

In this study, the researchers are attempting to provide a FTS database application that is available to all clubs under AFP and AFK. The web-based system is user-friendly, and each AFK-AFK under AFP has a username and password. Naturally, this WEB-based application system makes it easier for clubs as well as AFK and AFP to record clubs and players for administrative purposes. In addition to this FTS, they will be able to upload and develop their own database later on based on the registered clubs. Additionally, it has the ability to create match charts, which are useful for assembling tournaments held by AFP and AFK. Next, this FTS program may be used to import the official match calendars for both AFP and AFK. Each team that wins

an official match under the calendar established by AFP and AFK gets ranked.

It can be seen and categorized as a questionnaire based on the findings of the research that was done. The effectiveness aspect is 93%, the quality aspect is 93.33%, and the product satisfaction is 95%, according to the results of a large-scale trial data (phase II) on 30 Medan City Askot administrators. The average percentage in the "Very Appropriate" category for use as a new method of data input into a web-based system integrated futsal application is 93.77%.

## CONCLUSION

From the results of the research that has been carried out, the researcher concludes that this WEB-based system integrated futsal application product is suitable for use as a database for the North Sumatra AFP in monitoring the number of athletes, competitions, scheduling, club activities and rankings under official tournaments held under the auspices of the North Sumatra AFP . Apart from that, the public can find out the extent of the population and development of Futsal, especially in North Sumatra. Utilization of technology and information to support the fulfillment of the increasingly growing era of globalization.

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## REFERENCES

- Danurwindo, Putera, G., Sidik, B., & Prahara, J. L. (2017). Kurikulum Pembinaan Sepak Bola Indonesia. 166. [www.pssi.org](http://www.pssi.org)

- Darmawan, D. S., & Sedyono, E. (n.d.). Perancangan Aplikasi Sistem Informasi Gelanggang Olahraga Berbasis Web Menggunakan Framework Laravel.
- Endriani, D., Akhmad, I., & Daulay, B. (2022). Development of E-Book Based Volleyball Learning Model. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, 6(2), 363–370.  
<https://doi.org/10.33369/jk.v6i2.21915>
- Evan Savero, J., Raya, P., Tanjung Nyaho Jalan Yos Sudarso, K., & Tengah, K. (n.d.). APLIKASI PENGENALAN Olahraga Bola Besar Untuk Pelajar Menggunakan Teknologi Augmented Reality.
- Ferdian, D., Kusuma, B., Marcos, H., & Yunita, I. R. (2021). Rancang Bangun Aplikasi Pengelolaan Data Atlet IKASI Berbasis Website Menggunakan Framework Laravel. *Journal of Information Systems and Informatics*, 3(1). <http://journal-isi.org/index.php/isi>
- Ilahi, B. R., Raibowo, S., Sugihartono, T., & Hiasa, F. (2021). Kinestetik : Jurnal Ilmiah Pendidikan Jasmani Nike Training Club Applications To Improve Football Learning In The Independent Era Of. 5(100), 827–835.
- Imran Akhmad, S. (2017). Bleep Test Countermeasures Test Using Infrared and Microcontroller Based Computer System. *International Journal of Science and Research (IJSR)*, 7(8), 759–761.  
<https://doi.org/DOI:10.21275/ART2019550>
- Lalu Hulfian, S. (2022). Tingkat Validitas Dan Reliabilitas Instrumen Tes Keterampilan Bermain Futsal. *Jurnal Inovasi Riset Akademik*, 2(1), 27–34.
- Mesnan, M., Supriadi, A., & Siregar, I. (2019). Pengembangan Log Book Pembelajaran Sepak Bola Dengan Pendekatan Taktis. *Jurnal Prestasi*, 3(6), 68.  
<https://doi.org/10.24114/jp.v3i6.15895>
- Nurkadri, & Kholil, R. (2021). Korelasi Kekuatan Otot Tungkai, Kelincahan Dan Koordinasi Mata-Kaki Terhadap Kecepatan Dribbling Dalam Permainan Futsal Pada Pemain Futsal Inang Fc Tahun 2021. *Journal Coaching Education Sports*, 2(2), 137–150.  
<https://doi.org/10.31599/jces.v2i2.706>
- Nurkadri, N., Silwan, A., Sitepu, I. D., Nur, M., Akbar, T., & Gunri, R. N. (2021). Match Report Application for Match Commissioner (MC) Football Match. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, 5(2), 256–265.  
<https://doi.org/10.33369/jk.v5i2.15666>
- Nurkadri, N., Sihombing, H. S., Sitorus, I. M., & Malatua, M. (2023). LEVEL Of Knowledge Sports Coaching Education Students Related To Scientific Journal Articles. *Jurnal Ilmu Keolahragaan. Halaman Olahraga Nusantara*

- (HON), 6(1), 182–196.  
<https://doi.org/10.31851/hon.v6i1.10412>
- Okpatrioka. (2023). Research And Development (R&D) Penelitian Yang Inovatif Dalam Pendidikan. *Jurnal Pendidikan, Bahasa Dan Budaya*, 1(1), 86–100.
- Sugiyono. (2010). prof. dr. sugiyono, metode penelitian kuantitatif kualitatif dan r&d. intro ( PDF Drive ).pdf. In Bandung Alf (p. 143).
- Setia Hasibuan, B., Tantri, A., & Reza Destya, M. (2023). Kinestetik : Jurnal Ilmiah Pendidikan Jasmani Plan Prototype Microcontroller based 30 Meter Running Speed Test Equipment. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, 7(4). <https://doi.org/10.33369/jk.v7i4.29583>
- Sianturi, F. A. (2016). Aplikasi Pembelajaran Penjaskes Olahraga Basket Menggunakan Metode Computer Assisted Instruction (CAI). In *Journal Of Informatic Pelita Nusantara* (Vol. 1, Issue 1).
- Sintaro, S., Surahman, A., & Khairandi, N. (2020). Aplikasi Pembelajaran Teknik Dasar Futsal Menggunakan Augmented Reality Berbasis Android. *Journal Of Telematics and Information Technology*, 1(1), 22.
- Supriadi, A. (n.d.). Pengembangan Bahan Ajar Sepak Bola Dasar. In *Jurnal Ilmu Keolahragaan* (Vol. 16, Issue 1). Retrieved March 16, 2023, from <https://jurnal.unimed.ac.id/2012/index.php/JIK/article/view/6448/5645>
- Supriadi, A., & Mesnan, M. (2022). Development of Application Based Football Learning. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, 6(2), 297–304. <https://doi.org/10.33369/jk.v6i2.21852>
- Ulandari, D. S., Pujiyanto, D., Prabowo, A., & Defliyanto, D. (2021). Survei Tingkat Kondisi Fisik Vo2max Atlet Pada Klub Futsal Putri di Kota Bengkulu. *SPORT GYMNASTICS: Jurnal Ilmiah Pendidikan Jasmani*, 2(2), 306–318.
- Widodo Agung, N. T. (2023). Pelatihan Manajemen Penyelenggaraan Pertandingan Futsal Bagi Pengurus Organisasi Mahasiswa(1). *Jurnal Inovasi Dan Pengabdian Masyarakat Indonesia*, 2(2), 51–55. <https://jurnalnew.unimus.ac.id/index.php/jipmi>