**Bravo's: Journal of Physical Education and Sport Science**
Volume 14 Issue 2, Juny 2026, pp: 279-290
*E-ISSN: 2597-677X; P-ISSN: 2337-7674*
DOI: http://dx.doi.org/10.32682/bravos.v14i2/308

# Development of an interactive multimedia-based training program for offensive and defensive tactics in the soccer extracurricular activity

**Muhammad Aji Akbar[*1], Afri Tantri[2], Samsuddin Siregar[3], Amir Supriadi[4], Jaffry Zakaria[5]**

*[1] Department of Physical Education, Health, and Recreation, Faculty of Sports Sciences, Universitas Negeri Medan, Medan, Indonesia*
*[2]Department of Physical Education, Health, and Recreation, Faculty of Sports Sciences, Universitas Negeri Medan, Medan, Indonesia*
*[3]Department of Physical Education, Health, and Recreation, Faculty of Sports Sciences, Universitas Negeri Medan, Medan, Indonesia*
*[4]Department of Physical Education, Health, and Recreation, Faculty of Sports Sciences, Universitas Negeri Medan, Medan, Indonesia*
*[5]Faculty of Sport Science & Coaching (Department of Coaching Science) Sultan Idris Education University, Tanjung Malim, Perak, Malaysia*
**Corresponding author: ajiakbarmedan8888@gmail.com*

**Abstract**

This study aimed to develop an interactive multimedia-based training program for attacking and defensive techniques in high school soccer extracurricular activities. The study employed a Research and Development (R&D) approach based on the Borg and Gall model. Participants were students involved in soccer extracurricular activities at SMAN 1 Perbaungan and SMAN 1 Pantai Cermin. The development process included information gathering, planning, product development, field testing, revision, and implementation. Data were collected through expert validation sheets, practicality questionnaires, observations, and documentation. Product validity was evaluated by four expert validators consisting of an instrument expert, a material expert, a media expert, and a language expert. Product practicality was assessed by four soccer coaches. Data were analyzed descriptively using percentage-based criteria.The results showed that the developed multimedia program achieved a highly valid category with an average validity score of 88.73% and a highly practical category with an average practicality score of 92.85%. The product includes tactical materials, instructional videos, strategy animations, formation diagrams, and interactive learning features. Therefore, the developed multimedia program is suitable as a supporting training resource for high school soccer extracurricular activities.

**Keywords:** interactive multimedia; training programs; offensive tactics; defensive tactics; soccer extracurricular activities.



Received: 17 05 2026 Revised: 16 06 2026 Accepted: 26 06 2026

**Authors' Contribution:** A – Conceptualization; B – Methodology; C – Software; D – Validation; E - Formal analysis; F – Investigation; G – Resources; H - Data Curation; I - Writing - Original Draft; J - Writing - Review & Editing; K – Visualization; L – Supervision; M - Project administration; N - Funding acquisition

## INTRODUCTION

Extracurricular sports activities play an important role in supporting students' physical, cognitive, and social development outside formal classroom learning (Ramades & Arifai, 2025). Among the various sports offered in schools, soccer is one of the most popular activities because it provides opportunities for students to improve physical fitness, teamwork, discipline, and technical skills (Diah Nabila & Winarno, 2023). Successful soccer performance

depends largely on players' ability to apply attacking and defensive techniques effectively during match situations.

Attacking and defensive techniques are fundamental components of soccer that determine a team's performance. Attacking techniques involve building offensive plays, creating scoring opportunities, and converting chances into goals through passing, movement, ball control, and finishing (Putra G, 2023). In contrast, defensive techniques focus on preventing opponents from creating scoring opportunities, regaining possession, and maintaining team organization (Ajmal & Arisman, 2023). These two aspects are closely interconnected because effective attacking cannot be separated from organized defending, and vice versa (Tantri et al., 2023). Therefore, mastering attacking and defensive techniques is essential for developing tactical understanding and improving overall game performance among high school soccer players.

Despite their importance, several studies have reported challenges in the implementation of soccer extracurricular training programs. Training activities are often conducted using traditional methods, rely heavily on coaches' experience, lack systematic planning, and are not supported by structured training programs (Siregar et al., 2025;Windi et al., 2024 ). As a result, training sessions tend to be repetitive and less effective in improving participants' technical abilities (Prasetio et al., 2016). Similar conditions were identified during preliminary observations and interviews conducted at the research school. Coaches reported limited time to explain tactical concepts during training sessions, while many participants experienced difficulties in understanding attacking and defensive movements. In addition, training materials were not supported by structured learning resources or multimedia-based training aids, causing participants to rely solely on direct demonstrations from coaches.

Movement visualization is essential to soccer training because it helps players comprehend the stages needed in both offensive and defensive tactics. Participants can see the proper technical aspects through demonstration videos and motion animations, which reduces mistakes during on-field practice (Bahtiar et al., 2023). Interactive visual media is useful for enhancing the acquisition of difficult motor abilities in team sports, such as soccer, according to research (Pohan et al., 2025).

Another challenge arises from the heterogeneous skill levels of extracurricular participants. Some students have previous soccer experience, whereas others are still learning basic technical skills (Woro et al., 2024). This situation requires training programs that can

accommodate different learning needs while maintaining participant engagement. Previous studies have shown that training programs lacking systematic planning may reduce motivation and increase participant boredom during extracurricular activities (Ago Laja et al., 2024). In order to promote school-based extracurricular activities, a training program incorporating interactive multimedia technology must be developed (Valentino & Iskandar, 2020). Therefore, innovative training approaches are needed to improve the effectiveness of soccer extracurricular programs.

Recent advances in digital technology provide opportunities to enhance the quality of sports instruction and training in schools (Abdillah et al., 2025). One pertinent and creative way to support the creation and execution of soccer training programs is through the use of technology in the form of interactive multimedia (Siregar et al., 2025). One promising approach is the use of interactive multimedia, which integrates text, graphics, animation, video, and audio into a single learning environment (Twiska Naufal Arsyah Ghiffari & Ridwan, 2023). Interactive multimedia enables participants to visualize movement patterns more clearly and understand tactical concepts before practicing them on the field. Research has shown that multimedia-based learning can improve technical understanding, movement accuracy, and learning motivation in sports settings(Purnama Sari et al., 2023). Furthermore, visual demonstrations and motion animations have been found to facilitate the acquisition of complex motor skills in soccer training (Bahtiar et al., 2023; Pohan et al., 2025).

Previous studies have examined the effectiveness of structured training programs in improving players' tactical understanding and performance (Ago Laja et al., 2024). Other studies have reported positive effects of interactive multimedia on learning motivation and technical comprehension (Isa & Diningrum, 2022). In addition, tactics-based learning approaches supported by visual media have been shown to enhance soccer skills and decision-making abilities (Saitya & Yamin, 2022). However, these studies generally focus either on training methods or multimedia learning separately. Few studies have developed a comprehensive training product that systematically integrates attacking and defensive training materials with interactive multimedia specifically designed for high school soccer extracurricular activities. Moreover, existing studies rarely provide a structured training program that can be directly implemented by coaches in extracurricular settings. (Windi et al., 2024). This result is consistent with study (Saitya & Yamin, 2022) showing that tactics-based methods and visual media are useful for enhancing soccer abilities and decision-making.

Based on this gap, the novelty of the present study lies in the development of an interactive multimedia-based training program specifically designed for attacking and defensive techniques in high school soccer extracurricular activities. Unlike previous studies that focused primarily on instructional media or tactical training independently, this study integrates a structured training program, multimedia-based learning materials, video demonstrations, tactical explanations, and practical training guidance into a single product that can be used by both coaches and participants. The program is designed not only to improve technical understanding but also to support the implementation of systematic and standardized training activities.

Therefore, this study aims to develop and evaluate an interactive multimedia-based training program for attacking and defensive techniques in soccer extracurricular activities. The resulting product is expected to provide a valid, practical, and effective training resource that assists coaches in delivering tactical instruction and improves participants' understanding and performance of attacking and defensive techniques at the high school level.

## METHOD

Several instruments were used in this study to evaluate the validity and practicality of the interactive multimedia-based training program for attacking and defensive techniques in soccer extracurricular activities.

The product validity was assessed by four expert validators consisting of an instrument expert, a media expert, a material expert, and a language expert. All validators held doctoral degrees and possessed expertise and professional experience in their respective fields. The instrument expert evaluated the suitability, clarity, relevance, and consistency of the research instruments used in the study. The material expert assessed the accuracy of the attacking and defensive training content, the appropriateness of the learning objectives, the sequence of materials, and the suitability of the exercises for high school students. The media expert evaluated the interface design, navigation, visual appearance, interactivity, readability, and technical functionality of the multimedia product. The language expert assessed language clarity, readability, grammatical accuracy, consistency of terminology, and the appropriateness of language use for the target users.

The practicality of the developed product was evaluated by four soccer coaches involved in high school extracurricular soccer activities. The practicality questionnaire measured ease of use, clarity of instructions, attractiveness of the multimedia display, suitability for training activities, usefulness in supporting coaching practices, and overall user satisfaction. Responses

were collected using a four-point Likert scale, where 4 = strongly agree, 3 = agree, 2 = disagree, and 1 = strongly disagree.

Before implementation, all research instruments and the multimedia product were reviewed by the four expert validators to establish content validity. Recommendations and suggestions provided by the validators were used to revise and improve the product prior to field testing.

Data analysis focused on determining the validity and practicality of the developed product. Product validity was calculated based on the scores provided by the expert validators, while product practicality was determined from the responses of the soccer coaches. The obtained scores were converted into percentages and interpreted according to predetermined assessment criteria. A product was considered feasible when it achieved a valid or highly valid category and a practical or highly practical category.

**Validity Analysis**

Validity was calculated using the formula:

$$\text{Validity score} = \frac{\text{Total Score Earned}}{\text{Maximum score}}\ x\ 100\%$$

**Table 1**. Validity and practicality criteria

| Percentage (%) | Criteria |
|---|---|
| 81–100 | Highly valid |
| 61–80 | Valid |
| 41–60 | Fairly valid |
| 21–40 | Less valid |
| 0–20 | Not valid |

**Practicality Analysis**

Product practicality was calculated using the following formula:

$$\text{Practicality score} = \frac{\text{Total Score Earned}}{\text{Maximum score}}\ x\ 100\%$$

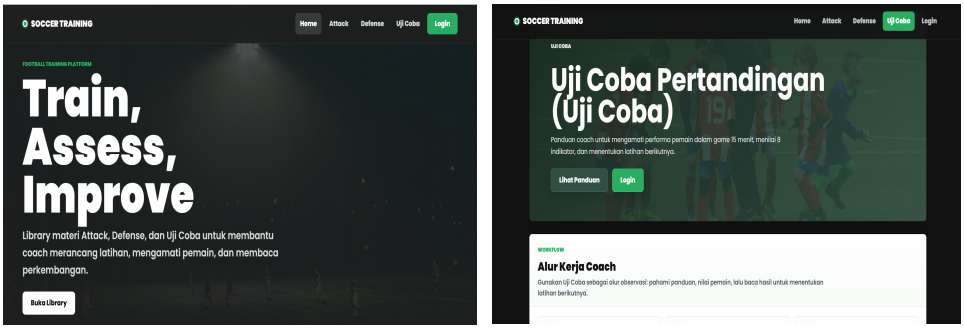
**Table 2**. Practicality criteria

| Percentage (%) | Criteria |
|---|---|
| 81–100 | Highly practical |
| 61–80 | practical |
| 41–60 | Fairly practical |
| 21–40 | Less practical |
| 0–20 | Not practical |

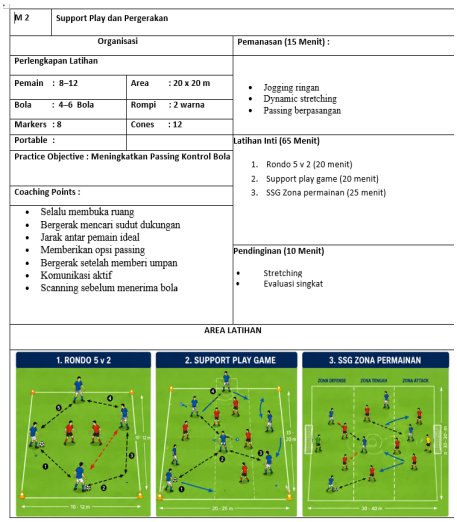
## RESULT

### *Product Development Results*

This study produced an interactive multimedia-based training program for attacking and defensive techniques in high school soccer extracurricular activities. The product was developed using the Borg and Gall R&D model and consists of attacking and defensive tactical materials, game simulation videos, strategy animations, formation diagrams, and interactive exercises. The multimedia interface includes a home page, attacking menu, defensive menu, and training program menu designed to facilitate independent learning and coach-guided training sessions. The product display is presented in Figure 1.




(a) home page (b) trial menu




(c) one example of a training program

Figure 1. Interactive multimedia display

***Expert Validation Results***

The validity of the product was evaluated by four expert validators consisting of one instrument expert, one material expert, one media expert, and one language expert, all of whom held doctoral qualifications in their respective fields. The validation results are presented in Table 2.

Table 2. Product Validity Results Table

| Evaluation Criteria | Percentage (%) | Criteria |
|---|---|---|
| Content Validity | 93.27% | Highly Valid |
| Instrument Validity | 90.83% | Highly Valid |
| Media Validity | 94.35% | Highly Valid |
| Language Validity | 92.92% | Highly Valid |
| Average | 92.84% | Highly Valid |

Based on the validators' suggestions, several revisions were made before field implementation. The revisions included improving the consistency of terminology, simplifying instructional sentences, enhancing menu navigation, refining visual layouts, and adding clearer explanations for several attacking and defensive tactical concepts. These revisions improved both the usability and instructional quality of the multimedia product.

The validity results indicate that the multimedia program is appropriate for implementation in soccer extracurricular activities. A summary of the validation results is illustrated in Figure 2.

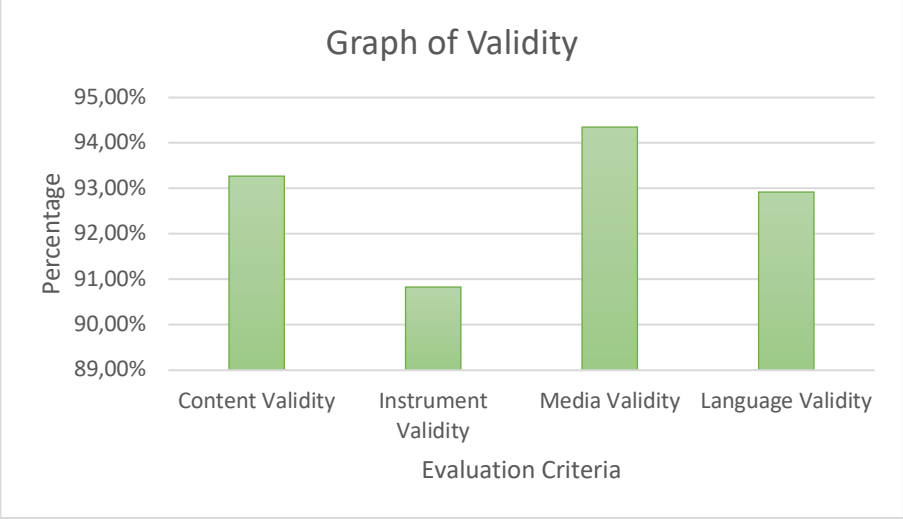



Figure 2. Graph of Validity

***Practicality Results***

The practicality of the product was evaluated by four soccer coaches who implemented the multimedia program during training sessions. The results are presented in Table 3.

Table 3. Product Practicality Results

| Assessment Aspect | Coach 1 | Coach 2 | Coach 3 | Coach 4 |
|---|---|---|---|---|
| Ease of Use | 95.00 | 95.00 | 90.00 | 95.00 |
| Media Display | 90.00 | 95.00 | 85.00 | 90.00 |
| Training Material | 95.83 | 87.50 | 91.67 | 95.83 |
| Program Benefits | 95.00 | 90.00 | 95.00 | 95.00 |
| Average | 93.96 | 91.88 | 90.42 | 93.96 |

The practicality assessment showed that all coaches rated the product very highly, with average scores ranging from 90.42% to 93.96%. The highest ratings were obtained for ease of use and program benefits, indicating that coaches found the multimedia easy to operate and useful for supporting training activities. The media display and training materials also received positive evaluations, suggesting that the content was attractive, understandable, and relevant to training objectives. In addition to coach evaluations, student responses should also be included to provide a more comprehensive assessment of practicality. Student feedback can be used to evaluate the attractiveness, ease of use, clarity of materials, and overall satisfaction with the multimedia product. The practicality results are summarized in Figure 3.

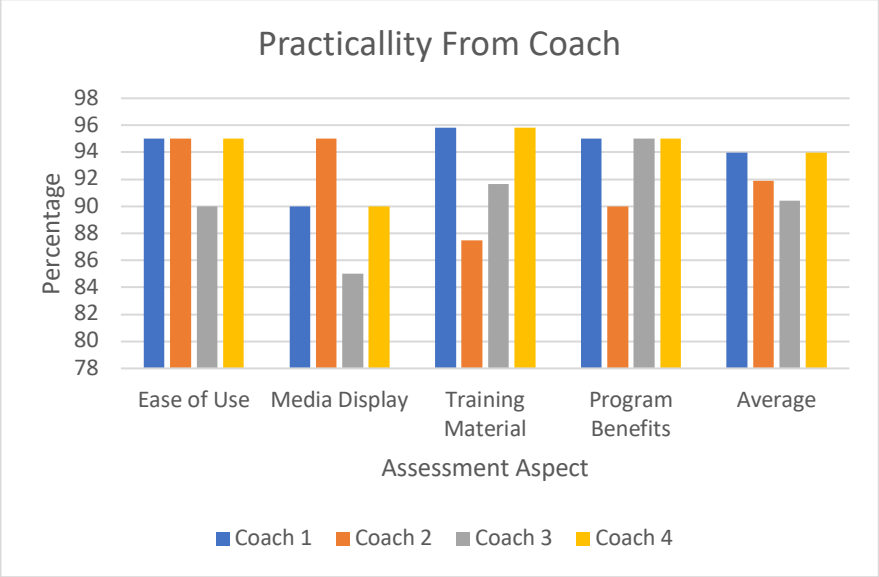



Figure 3. Graph of Practicallity

Figure 1 shows the practicality assessment results of the interactive multimedia-based training program evaluated by four coaches. Overall, the program obtained very high average scores from all coaches, ranging from 90.42 to 93.96. The highest scores were found in the aspects of ease of use and program benefits, indicating that the training program was considered easy to operate and useful in supporting soccer extracurricular training activities. In addition, the media display and training material aspects also received positive evaluations, demonstrating that the multimedia content was attractive, clear, and relevant to the training objectives. These findings indicate that the developed program has a high level of practicality and is feasible to be implemented in soccer extracurricular activities.

## DISCUSSION

The results indicate that the interactive multimedia-based training program for attacking and defensive techniques achieved a highly valid category based on evaluations conducted by four expert validators, consisting of an instrument expert, a material expert, a media expert, and a language expert. The high validity scores suggest that the product meets the requirements for content accuracy, instructional design, media quality, language appropriateness, and assessment suitability. The material expert confirmed that the attacking and defensive training content was relevant to the objectives of soccer extracurricular activities, while the media expert considered the multimedia design and interactive features appropriate for supporting learning and training activities. In addition, the language expert verified that the instructions and explanations were clear and understandable for high school students. These findings indicate that the developed product has been systematically designed and is suitable for use in soccer extracurricular settings.

The high validity results may also be attributed to the integration of multiple multimedia elements, including instructional videos, strategy animations, formation diagrams, and interactive learning features. Such components provide a more comprehensive presentation of tactical concepts than conventional training materials. Visual and interactive representations can assist users in understanding abstract tactical concepts and player movements more clearly, making the product relevant as a supporting medium for soccer training activities (Itu et al., 2025).

The practicality assessment conducted by four soccer coaches showed that the developed product was highly practical. This finding indicates that the multimedia program was considered easy to use, relevant to training needs, and appropriate for implementation in

extracurricular soccer activities. The positive practicality results suggest that the product can support coaches in delivering attacking and defensive tactical materials in a more structured and organized manner. The user-friendly interface, clear navigation, and systematic presentation of training content contributed to the positive evaluations provided by the coaches.

These findings are consistent with previous studies reporting that interactive multimedia can support sports training by presenting learning materials in a more engaging and accessible format (Ignatius et al., 2026). The integration of digital technology into extracurricular sports activities also reflects current educational trends that encourage the use of technology-enhanced learning resources. Therefore, the developed multimedia program has the potential to serve as an alternative training resource for soccer extracurricular activities at the high school level.

It should be noted that this study was limited to the development, validation, and practicality evaluation of the multimedia product. The study did not examine the effectiveness of the product in improving students' attacking and defensive tactical skills. Therefore, conclusions regarding the impact of the multimedia program on students' performance cannot be drawn from the present study. Future research is recommended to investigate the effectiveness of the developed product through experimental studies involving pretest-posttest designs and larger participant groups.

## CONCLUSIONS

This study resulted in the development of an interactive multimedia-based training program for attacking and defensive techniques in high school soccer extracurricular activities. Based on evaluations conducted by four expert validators consisting of a material expert, a media expert, an instrument expert, and a language expert, the developed product achieved a highly valid category with an average score of 88.73%. In addition, the practicality assessment conducted by four soccer coaches indicated that the product was highly practical, obtaining an average percentage of 92.85%.

The developed multimedia program integrates instructional videos, strategy animations, formation diagrams, and interactive learning features to support the delivery of attacking and defensive tactical materials. The validation and practicality results indicate that the product is appropriate for use in high school soccer extracurricular activities and can serve as an alternative training resource for coaches and students. Therefore, the developed multimedia-based training program is considered feasible for supporting the implementation of attacking and defensive tactical training in school soccer extracurricular programs.

This study was limited to the development, validation, and practicality evaluation of the product. Future research is recommended to examine the effectiveness of the developed multimedia program in improving students' attacking and defensive tactical skills through experimental studies involving larger participant groups.

## ACKNOWLEDGMENTS

The author would like to express sincere gratitude to the supervisors for their guidance, support, and valuable suggestions throughout the research process, as well as to the examiners for their constructive feedback and input in improving this study. Special appreciation is addressed to SMAN 1 Perbaungan and SMAN 1 Pantai Cermin for their cooperation during the research implementation. The author also thanks Universitas Negeri Medan, family, friends, and all parties who provided support and encouragement in completing this research.

## REFERENCES

Abdillah, I., Siregar, S., Burgueño, R., Lea, F. R., & Barton, G. (2025). The Influence of Pro Evolution Soccer Game-Based Learning on Understanding Football Rules among Tenth Grade Students. *INSPIREE: Indonesian Sport Innovation Review*, *6*(01), 01–10. https://doi.org/10.53905/inspiree.v6i01.136

Ago Laja, H. J., Wani, B., & Bate, N. (2024). Pengembangan Model Latihan Pertahanan Permainan Sepak Bola. *Jurnal Edukasi Citra Olahraga*, *4*(1), 38–52. https://doi.org/10.38048/jor.v4i1.2853

Ajmal, & Arisman. (2023). Journal Sport Rokania. *Journal Sport Rokanisa*, *3*(2), 1–18. https://e-jurnal.rokania.ac.id/index.php/jsr/article/download/91/66. https://doi.org/10.56313/jsr.v3i2

Bahtiar, A., Safari, I., & Fauzi, R. A. (2023). Journal of Physical Education , Sport , Health and Recreations BOLA. *Journal of Physical Education, Sport, Health and Recreations*, *13*(3), 421–426. https://doi.org/10.15294/peshr.v13i3.8286

Diah Nabila, & Winarno, M. E. (2023). Tingkat Kebugaran Jasmani Peserta Ekstrakurikuler Olahraga Di SMA Islam Almaarif Singosari Kabupaten Malang. *Jurnal Segar*, *11*(2), 91–100. https://doi.org/10.21009/segar/1102.06

Ignatius, R., Badrun, M., & Rahman, A. (2026). *Analisis Keterampilan Teknik Dribbling dan Kontrol Bola dalam Permainan Sepak Bola pada Siswa SMK Methodist Tanjung Morawa*. *11*(01), 125–133. https://doi.org/10.26877/jo.v11i1.343

Isa, Y., & Diningrum, J. K. (2022). *Pengembangan media pembelajaran interaktif pada mata pelajaran pendidikan jasmani olahraga dan kesehatan kelas VII SMP*. BaJET (Baturaja Journal of Educational Technology), 17(1), 96–104. https://www.journal.unbara.ac.id/index.php/BaJET/article/view/1820

Itu, D., Tapo, Y. B. O., Bile, R. L., & Natal, Y. R. (2025). Pengembangan Program Latihan Ekstrakurikuler Tipe a-B-C Bagi Tim Bola Voli Sekolah Dasar. *Jurnal Edukasi Citra Olahraga*, *5*(1), 27–40. https://doi.org/10.38048/jor.v5i1.5134

Pohan, I. C., Supriadi, A., & Abady, A. N. (2025). Jurnal Ilmiah STOK Bina Guna Medan Jurnal Ilmiah STOK Bina Guna Medan. *Jurnal Ilmiah STOK Bina Guna Medan (JISBG)*, *13*(1), 30–39. https://jurnal.stokbinaguna.ac.id/index.php/JSBG. https://doi.org/10.55081/jsbg.v13i1.3809

Prasetio, E. F., Dwiyogo, W. D., & Sudjana, I. N. (2016). *Pengembangan multimedia interaktif model latihan bertahan (defense) sepakbola pada ekstrakurikuler sepakbola di SMP Negeri 15 Malang*. Pendidikan Jasmani, 26(1), 129–144. https://doi.org/10.17977/pj.v26i1.7735.

Purnama Sari, A., Okra, R., Antoni Musril, H., & Sarwoderta. (2023). *Perancangan media pembelajaran animasi 3D pada mata pelajaran pendidikan jasmani olahraga dan kesehatan di MTsN 6 Agam*. INNOVATIVE: Journal of Social Science Research, 3(2), 13382–13391. https://j-innovative.org/index.php/Innovative/article/view/1939

Putra G, J. P. A. (2023). Meningkatkan Hasil Belajar Teknik Dasar Sepak Bola dengan Penerapan Model Problem Based Learning Berbasis Information and Communication Technology. *Jurnal Ilmu Keolahragaan Undiksha*, *11*(2), 190–197. https://doi.org/10.23887/jiku.v11i2.58274

Ramades, H., & Arifai. (2025). *Analisis minat siswa terhadap kegiatan ekstrakurikuler sepak bola di SMA Budi Mulya*. Al-Zayn: Jurnal Ilmu Sosial & Hukum, 3(1), 32–37. https://doi.org/10.61104/alz.v3i1.718

Saitya, I., & Yamin, M. (2022). PIOR: Jurnal Pendidikan Olahraga. *PIOR: Jurnal Pendidikan Olahraga*, *1*(1), 32–41. https://jurnal.habi.ac.id/index.php/Pior

Siregar, S., Pardilla, H., Hasibuan, N., Fahmi, M., Kasih, I., & Faridah, E. (2025). Enhancing refereeing skills: exploring the influence of an Android table tennis app on student referees. *Retos*, *66*, 75–85. https://doi.org/10.47197/retos.v66.112160

Tantri, A., Siregar, A. H., Hasibuan, N., & Aprial. M, B. (2023). Development of interactive sport measurement test learning media. *Jurnal Keolahragaan*, *11*(2), 266–280. https://doi.org/10.21831/jk.v11i2.63764

Twiska Naufal Arsyah Ghiffari, & Ridwan, M. (2023). Penerapan Multimedia Interaktif Terhadap Minat Belajar Sepakbola. *Jurnal Penjakora*, *10*(2), 73–79. https://doi.org/10.23887/jurnalpenjakora.v10i2.65860

Valentino, R. F., & Iskandar, M. (2020). Identifikasi Minat Siswa Pada Ekstrakurikuler Sepak Bola. Jurnal Master Penjas & Olahraga, 1(1), 47–54. https://doi.org/10.37742/jmpo.v1i1.7.

Windi, A., Kasmawati, A., & Suharman, A. (2024). BEGIBUNG : Jurnal Penelitian Multidisiplin. *BEGIBUNG: Jurnal Penelitian Multidisiplin*, *2*(2), 330–336. https://doi.org/10.62667/begibung.

Woro, S. B., Ariansyah, S. Z., & Mursyid, A. F. (2024). *Analisis tingkat kebugaran jasmani siswa sekolah menengah atas dalam ekstrakurikuler futsal usia 16–19 tahun: Systematic literature review*. Prosiding Seminar Nasional Pendidikan Jasmani dan Kesehatan Mental Peserta Didik, 306–316. https://proceeding.unnes.ac.id/snpjkmpd/article/view/4206