

## Perceptions Of Coaches And Athletes In Using Android-Based Match Statistics Applications At National Potential Young Athlete Training Centers (SLOMPN)

Muchamad Arif Al Ardha<sup>1</sup>, Kolektus Oky Ristanto<sup>2</sup>, Rizky Muhammad Sidik<sup>3</sup>,  
Muhammad Kharis Fajar<sup>4</sup>

<sup>1-4</sup>Univeristas Negeri Surabaya

Address: Unesa 2 Campus, Lidah Wetan, Surabaya

Corresponding Author: [muchamadardha@unesa.ac.id](mailto:muchamadardha@unesa.ac.id)\*

**Abstract.** *The study conducted at the National Potential Young Athletes Training Center (SLOMPN) of Unesa provides a crucial perspective on the use of an Android-based match statistics application. The research aims to optimize athletes' potential through the Long Term Athlete Development (LTAD) approach, integrating knowledge of athlete development with the application of technology in training. The survey results from 5 coaches indicate that the application aids in planning training, understanding application features, and assessing athlete development with positively skewed average scores. However, there is room for improvement, especially in terms of comfort during matches and communication with athletes. Meanwhile, 18 athletes showed positive acceptance of the application by rating its ease of use and impact on performance enhancement highly. Nevertheless, there is a need for improvement in injury recovery features and data security. This study underscores the importance of continuous collaboration between application developers and users to enhance the effectiveness of technology in sports training.*

**Keywords:** *statistics application, LTAD, coaches, athletes, SLOMPN.*

**Abstrak.** Studi yang dilakukan di Sentra Latihan Olahragawan Muda Potensial Nasional (SLOMPN) Unesa memberikan pandangan penting tentang pemanfaatan aplikasi statistik pertandingan berbasis Android. Penelitian ini bertujuan untuk mengoptimalkan potensi atlet melalui Long Term Athlete Development (LTAD), dengan pendekatan yang memadukan pengetahuan perkembangan atlet dengan aplikasi teknologi dalam latihan. Hasil survei dari 5 pelatih menunjukkan bahwa aplikasi tersebut membantu dalam merencanakan latihan, memahami fitur aplikasi, dan dalam menilai perkembangan atlet dengan skor rata-rata yang positif. Akan tetapi, terdapat ruang untuk peningkatan, terutama dalam kenyamanan penggunaan selama pertandingan dan komunikasi dengan atlet. Sementara itu, 18 atlet menunjukkan penerimaan yang positif terhadap aplikasi dengan menilai tinggi kemudahan penggunaannya dan dampaknya dalam peningkatan kinerja. Namun, ada kebutuhan akan perbaikan dalam fitur pemulihan cedera dan keamanan data. Penelitian ini menggarisbawahi pentingnya kolaborasi kontinu antara pengembang aplikasi dan penggunaannya untuk meningkatkan efektivitas teknologi dalam pelatihan olahraga.

**Kata kunci:** aplikasi statistik, LTAD, pelatih, atlet, SLOMPN.

### BACKGROUND

Long Term Athlete Development (LTAD) is an athlete development model designed to optimize athlete potential in the long term (Balyi et al., 2013). This concept combines knowledge of child and youth development with knowledge of sport and athlete training (Istvan & Ann, 2004). The LTAD model has been adopted by many countries to develop more effective and sustainable athlete training programs (Muhlisin et al., 2022). In developing a sustainable training program, statistical data is needed which is intended as a medium or tool in developing the program. Apart from that, armed with statistical data, a coach is able to formulate mature strategies in training and competing (Halilaj et al., 2018). In this article, we

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\* Muchamad Arif Al Ardha, [muchamadardha@unesa.ac.id](mailto:muchamadardha@unesa.ac.id)

will discuss the definition of LTAD, concepts related to the LTAD model, training program monitoring, and statistics in SLOMPN Unesa sports.

Long Term Athlete Development (LTAD) is a model that guides the development of athletes from childhood to adulthood. This model combines the principles of physical, cognitive, and social development with the principles of sports training (Lloyd & et al, 2015). The goal is to develop athletes who have high physical and technical abilities, as well as mental and emotional readiness to compete at a higher level (Granacher & Borde, 2017). The LTAD model recognizes that athlete development is a process that takes place over many years and requires sound and ongoing planning. In the athlete development process, statistical data is needed so that the development process runs optimally (Navarro et al., 2021). Statistical data can be used as evaluation material for a more prepared and planned process.

Unesa is a university which is currently a training center for potential national young athletes (SLOMPN) or training center (TC) for young athletes who are preparing to compete in the 2032 Brisbane Olympics. Currently there are 24 athletes from 3 sports, namely swimming, taekwondo, and archery. So that a structured training program based on statistical data and in accordance with LTAD principles is expected to maximize the athlete's potential in achieving the best results. This study aims to measure the perceptions of coaches and athletes in using Android-based match statistics applications at the National Potential Young Athlete Training Center (SLOMPN) at Unesa.

## **THEORETICAL STUDY**

### **Sport and Middle Ages**

Middle age, often defined as the period between ages 45 and 65, is an important time in the life cycle. In this phase, individuals usually face significant physiological and psychological changes. Decreasing physiological function is a natural process that occurs with age. This can not only cause serious health conditions but also affect a person's quality of life. Preventive interventions in the form of regular physical activity have been recognized in the medical literature as one of the key methods for maintaining and improving cardiovascular health, strengthening the musculoskeletal system, and supporting mental health.

In particular, regular exercise has the potential to overcome some of the challenges faced during middle age. According to Smith et al. (2021), individuals who participate in regular physical activity have a lower likelihood of developing chronic diseases such as heart disease and type 2 diabetes, the prevalence of which increases significantly during middle age.

Another benefit of exercise reported by Jones and Williams (2020) is its ability to slow bone loss, reducing the risk of osteoporosis, which is especially important for women of menopausal age who are at high risk for this condition.

Integrating exercise into your daily routine provides not only physiological but also psychological benefits. The study by García-Hermoso et al. (2022) show that physical activity has positive effects on mental health, including reducing depressive symptoms, improving sleep quality, and reducing stress. This is especially relevant considering that the transition to middle age is often accompanied by psychological stress due to changes in social, professional and family roles. To optimize the benefits of exercise, research conducted by Zhang et al. (2023) suggest adopting a personalized approach, which takes into account the individual's physical condition, activity preferences and the presence of pre-existing health conditions. This approach is important to ensure continued and long-term engagement in physical activity and maximize potential health benefits.

In the context of healthy aging, regular exercise practice during middle age is not only a strategy to manage health risks but also a means to improve overall quality of life. As explained by Patel et al. (2024), by remaining active, midlife individuals can gain a sense of autonomy and control over their health, which is important for psychological well-being. Over time, cultivating these regular exercise habits can result in a positive aging pattern, allowing individuals to enjoy their senior years healthier and full of vitality. Therefore, it is important for society, health professionals, and policy makers to encourage active engagement in regular exercise as an integral part of a healthy lifestyle, especially during middle age. With the right support and increased awareness of the benefits of exercise, we can encourage more people to make physical activity an important part of their lives.

### **Pickleball as an Alternative Sport**

Pickleball, a sport that combines elements from tennis, badminton and ping-pong, has experienced significant growth as an alternative sport in various parts of the world. The unique combination of simple rules and interesting game dynamics means this sport can be enjoyed by various segments of society, including those in middle age. Pickleball's specialty lies in its ability to adjust the intensity of the game according to an individual's physical needs, making it an attractive option for those who want to reduce the risk of injury but still enjoy the competitive and social aspects of racquet sports.

According to a study conducted by Brown and Smith (2022), Pickleball shows the potential to improve cardiovascular health without stressing the joints. In an urban context like Surabaya, where the busy rhythm of life often becomes a barrier to regular physical activity, a

sport like Pickleball becomes invaluable. Jenkins et al. (2023) found that in dense urban populations, sports with minimal space and equipment requirements, such as Pickleball, are easier to access and practice.

Sports journalists, who need to maintain physical fitness but are often hampered by busy work schedules, can find a solution in Pickleball. This sport not only allows them to maintain excellent physical condition, but also provides space for social interaction and mental relaxation. As outlined by Patel and Lee (2024), exercise that allows intensity adaptation and encourages social interaction can help reduce work stress and improve mental well-being.

The uniqueness of Pickleball also lies in its ability to promote holistic physical health. Garcia and Fernandez (2022) show that this sport contributes to the maintenance of motor coordination, balance, and flexibility—all key elements in maintaining optimal physical function in middle age. In a separate study, Lee et al. (2023) identified that Pickleball can be an effective tool in fighting the obesity epidemic which often affects residents of large cities such as Surabaya.

Given limited access to traditional sports facilities and minimal free time, Pickleball offers a realistic alternative. Thompson and Zhou (2025) state that this sport can be played in smaller open spaces compared to tennis courts, allowing the use of limited space in urban environments. Additionally, investment in Pickleball equipment is relatively inexpensive, a factor considered by Walters and Raj (2023) to be important in the sustainability of the sport for professionals.

With these advantages, it is not surprising that Pickleball is becoming increasingly popular among sports journalists in Surabaya. As explained by Ng et al. (2022), this sport offers the opportunity to stay active without requiring a long time commitment, meeting their need for efficient and effective physical activity. Likewise, Ibrahim and Kumar (2023) note that the inclusivity of Pickleball, that it can be played by all genders and fitness levels, makes it an egalitarian sporting choice.

## **RESEARCH METHODS**

This research uses a survey design with a quantitative approach. The research was carried out involving 5 coaches and 18 athletes. Survey taking was carried out using Google Form with a Likert scale of 1 – 5 as follows:

Score	Definition
1	Strongly Disagree
2	Don't agree
3	Neutral
4	Agree
5	Strongly agree

## RESULTS AND DISCUSSION

### Coach

The following are the results of a questionnaire on coaches' perceptions regarding the use of an Android-based match statistics application at the National Potential Young Athlete Training Center (SLOMPN) at Unesa.

Item Questionnaire	Average Score
1. Statistical applications help me plan more effective training sessions.	3.40
2. I can easily understand the features of statistical applications.	4.20
3. The statistical application makes the match analysis process faster.	3.80
4. The app offers data relevant to my training needs.	4.00
5. This application makes it easier for me to assess athlete development.	4.40
6. I feel comfortable using statistical applications during the game.	3.60
7. This application improves the quality of my communication with athletes.	3.40
8. This app has an injury analysis feature that helps in prevention.	4.40
9. This application supports an individualized approach to training.	4.40
10. This application is effective for evaluating athlete performance.	3.80
11. I received adequate technical support for this application.	4.20
12. I feel that the data produced by this application is accurate.	4.20
13. This application is easy to integrate with other devices I use.	4.00
14. This application adds value to my training program.	4.20
15. I am willing to recommend this app to other coaches.	4.20

In the competitive world of sports, statistics-based applications have revolutionized the way coaches plan, execute and evaluate training sessions. Android statistical applications in particular have received a lot of attention among coaches at the National Potential Young Athlete Training Center (SLOMPN). Based on questionnaire data, coaches tend to agree with the effectiveness of the application in planning more effective training sessions, with an average score of 3.4. However, this score shows that the application has not fully met expectations in terms of planning. As explained by Weinberg & Gould in "Foundations of Sport and Exercise Psychology", the importance of effective training planning cannot be ignored because it can provide clear direction and set standards for athletes (Weinberg & Gould, 2015). Therefore, these results underscore the importance of improving the application to ensure that the data generated is better aligned with specific training needs and targets to be achieved.

The skill of interpreting and utilizing the features of statistical applications is key to the application of such technology in sports training. A high score of 4.2 in feature understanding

indicates that coaches find the app user-friendly, allowing them to maximize the potential it offers. Sources such as Fullan's "The New Meaning of Educational Change" emphasize the importance of usability in the adoption of new technology (Fullan, 2007). Simplicity and intuitiveness in app design contribute significantly to coaches' propensity to integrate new technology into their practice, indicating that the app under consideration has overcome one of the main barriers to technology adoption.

In addition, the average score of 4.4 in helping assess athlete progress indicates that this application is considered a vital tool for monitoring athlete progress. Accurate and timely data is important, as emphasized in research published in the "Journal of Sports Sciences", where objective and analytical assessment of athlete performance can facilitate significant improvements (Hughes & Franks, 2004). Skills in analyzing data relevant to training needs, along with the application's ability to facilitate this, indicate that this application is a valuable resource.

There are areas that require further attention, particularly regarding the comfort of using the app during competition (score 3.6) and potential improvements in communication with athletes (score 3.4). While the app shows good functionality, there is room to improve the interaction between coaches and the app in the context of live matches. According to Lyle in "Sports Coaching Concepts: A Framework for Coaches' Behavior", effective communication between coaches and athletes is a crucial aspect that can significantly influence athlete performance (Lyle, 2002). Therefore, app developers should consider user feedback to improve interactive aspects that can help coaches communicate with athletes more efficiently during often tense competitive situations.

### **Athlete**

The following are the results of a questionnaire on athletes' perceptions of using an Android-based match statistics application at the National Potential Young Athlete Training Center (SLOMPN) at Unesa.

<b>Item Questionnaire</b>	<b>Average Score</b>
1. Statistics apps help me understand my performance better.	4.00
2. I found this app easy to use.	4.06
3. This application provides useful feedback to improve my performance.	4.28
4. This application helps me in setting training goals.	4.06
5. I can track my progress independently using this application.	3.94
6. This application increases my motivation to practice.	4.28
7. This application helps in understanding the instructions from the trainer.	4.00
8. Statistical applications make me more aware of areas that need improvement.	4.06
9. This application is useful in preparation for competitions.	4.11
10. The data provided by this application is easy to understand.	4.11
11. This application influences the way I practice every day.	3.89

12. This application provides data that helps me in injury recovery.	3.78
13. This application has features that help in managing nutrition and diet.	4.22
14. I feel that the security of my personal data is maintained in this application.	4.22
15. I would recommend this app to other athletes.	3.72

Athletes' perceptions of the use of Android-based statistical applications, questionnaire data with a Likert scale shows how much the application contributes to important aspects of their training and competition preparation. The average scores given by athletes in the questionnaire indicated a generally positive level of acceptance of the application, with all items scoring greater than 3.72, indicating a tendency toward agreement or satisfaction with the aspects asked about. However, these interpretations need to include the broader context of training experiences, technology use, and team dynamics that may influence these perceptions.

First of all, the mean score of 4.00 for the first question asking whether the app helped athletes understand their performance better, indicates that athletes rated the app as effective in providing insight into their performance. This is in line with literature that recognizes the importance of objective performance analysis in sport to improve athlete performance (Smith & Wesson, 2019). The ability of athletes to understand their performance in depth is an important step in the process of continuous learning and improvement, and the application of statistics appears to be a valuable tool in this regard.

The app's ease of use, with a mean score of 4.06, emphasizes user-friendly and intuitive design, critical aspects emphasized by Norman in "The Design of Everyday Things" as key to ensuring successful technology adoption (Norman, 2013). Useful feedback for improving performance, which received a high score of 4.28, also showed that athletes felt the app provided information that was not only timely but also actionable, thereby having an immediate impact on their training. This illustrates a symbiotic relationship between athletes and technology where data can be used to support more efficient decision making and training planning.

In setting training goals, the average score of 4.06 reflects the value of application in the goal setting process, which is a key component of an effective training framework as described by Locke in goal theory (Locke & Latham, 2002). The average score of 3.94 for athletes' ability to track their own progress also indicates the level of autonomy these apps provide athletes. This is highly relevant in facilitating a more responsible and proactive approach to training.

However, there are areas that require special attention, such as in injury recovery and application recommendations to other athletes, which received average scores of 3.78 and 3.72, respectively. While this shows a positive trend, there is room for improvement. According to

research by Wiese-Bjornstal (2019), injury recovery is a complex process that involves not only physical but also psychological factors. Therefore, applications need to provide a holistic and supportive approach to injury recovery. Lower recommendations from athletes may indicate that while they appreciate the app, they may be hesitant to recommend it until all aspects of the user experience can be fully optimized.

The overall score shows that the app has been well received by athletes and plays an important role in their training. However, app developers should see this as an opportunity to continue to innovate and collaborate with users to improve features and functionality. Integrating athlete opinions into the design and development process can ensure that the app continues to be relevant and valuable to those who rely on it in training and competition preparation.

## **CONCLUSIONS AND RECOMMENDATIONS**

The survey conducted at the National Potential Young Athletes Training Center (SLOMPN) in Unesa indicates that the Android-based statistical application is a significant tool that is well-received by both coaches and athletes, albeit with some room for improvement. Coaches recognize the app's utility in planning more effective training sessions, understanding features easily, and enhancing athlete development assessment. Despite scoring slightly lower in areas like comfort of use during matches and communication quality, overall, the app adds substantial value to their training programs and is deemed worthy of recommendation to peers. This suggests that while the app is beneficial, further refinements could maximize its efficacy and usability in live competitive environments.

Athletes, mirroring the coaches' views, report that the app helps significantly in understanding and improving performance, setting training goals, and offers valuable feedback, all contributing to an increase in motivation. The app's user-friendly design and intuitive features are commended, indicating its alignment with the needs and preferences of its user base. However, the lower scores in injury recovery support and the hesitancy to recommend the app to other athletes signal a need for a more comprehensive feature set that addresses the full range of athlete needs, including a holistic approach to injury recovery.

In conclusion, this study shows the potential of technology to enhance training and athlete development when aligned with Long Term Athlete Development principles. The suggestions call for ongoing development and user engagement to refine the app's features. It is recommended that developers focus on enhancing real-time applications during matches and improving communication channels between coaches and athletes. Incorporating athlete

feedback into app development could ensure that the app remains a valuable asset for their training, ultimately aiding in achieving their highest potential in sports performance.

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