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## THE CONTRIBUTION OF SLOMPN UPI TO YOUNG ATHLETE DEVELOPMENT: A DESCRIPTIVE ANALYSIS OF 2022–2023 ACHIEVEMENT

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**Abstract.** This study aims to analyze the contribution of the National Potential Youth Sports Training Center (SLOMPN) of the Indonesia University of Education in coaching young athletes with outstanding achievements during the 2022-2023 period. Using a quantitative descriptive method with secondary data analysis techniques, this study examined 72 competition participations of 17 athletes out of a total population of 19 athletes distributed across three sports: Taekwondo, Athletics, and Archery. Results demonstrate a remarkably high success rate of 94.4% in medal acquisition, with 59.7% being gold medals. Taekwondo dominates with 88.9% of total achievements and a gold medal rate of 65.6%, while Athletics and Archery remain in developmental phases. Performance distribution shows 51.4% achieved at provincial level, 38.9% at national level, and 2.8% at international level. Individual performance analysis identifies adequate talent pool depth with 10 athletes achieving 4 or more medals. Findings reveal that SLOMPN UPI's success is supported by effective selection systems, ideal coach-athlete ratio (6.5:1), structured training programs, and strategic university collaboration. However, limited international exposure (2.8%) and high dependency on one sport require attention. This research reinforces the proposition that sport-specialized schools integrated with universities can serve as an effective blueprint for youth athlete development in Indonesia, noting the need for increased international exposure and sport diversification for long-term sustainability.

**Keywords:** athlete development; sport-specialized school; sport achievement; talent development; SLOMPN



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## **INTRODUCTION**

The development of talented young athletes represents a strategic investment in the national sports system that determines long-term performance sustainability (De Bosscher et al., 2024). An effective development model requires systematic integration of talent identification, structured training, and competitive exposure within an environment that supports holistic athlete development (Baker et al., 2023). In the Indonesian context, sport-specialized schools serve as one of the main pillars in the school-age athlete development system, yet comprehensive evaluation of their effectiveness remains limited.

The National Potential Youth Sports Training Center (SLOMPN) at Universitas Pendidikan Indonesia represents a development model that integrates formal education with intensive sports training. This model aligns with the Long-Term Athlete Development (LTAD) concept that emphasizes the importance of development periodization adapted to athlete developmental stages (Lloyd et al., 2020). However, the effectiveness of implementing this model in the Indonesian context has not been comprehensively documented through systematic performance data analysis.

The SPLISS framework (Sports Policy factors Leading to International Sporting Success) identifies nine policy pillars that contribute to international elite sports success (De Bosscher et al., 2023). Several key pillars include the talent identification and development system, athlete support, quality training facilities, and tiered competition. Evaluation of the implementation of these pillars in the sport-specialized school context can provide valuable insights for national development system enhancement, particularly in the context of implementing an athlete-centered approach (Wrang et al., 2022). that emphasizes athlete empowerment (Cronin et al., 2021).

Recent research shows that success in young athlete development is determined not only by training volume but also by the quality of development structure, appropriate competitive exposure, and comprehensive system support (Sæther, 2023a; Wrang et al., 2022). Longitudinal studies reveal that effective pathway development is multidimensional and requires flexibility in entry and exit points at various stages of athlete development (Baker et al., 2024). Furthermore, the importance of psychological

skills training in young athlete development has been identified as a critical factor often overlooked in conventional development programs (Cowden et al., 2021).

Although several studies have explored specific aspects of young athlete development in Indonesia, a significant knowledge gap still exists regarding comprehensive analysis of sport-specialized school performance output. Fundamental questions regarding the effectiveness of the development model, performance distribution based on competition level, individual athlete performance consistency, and program sustainability have not been satisfactorily answered through systematic empirical data analysis. In the global context, recent research emphasizes the importance of holistic athlete development that integrates physical, technical, tactical, psychological, and social aspects (Johnston et al., 2020).

This research aims to fill that gap by descriptively analyzing the performance achievements of SLOMPN UPI during the 2022-2023 period. The analytical focus includes: (1) performance distribution by sport and competition level, (2) success rate in medal acquisition, (3) individual athlete performance consistency, (4) talent pool depth, and (5) identification of strengths and development areas in the coaching system. Using the SPLISS and LTAD theoretical frameworks validated in international elite development contexts (Henriksen et al., 2020), this research is expected to contribute theoretically to understanding factors influencing school-age athlete development effectiveness, as well as provide practical recommendations for developing other sport-specialized schools in Indonesia.

## **METHOD**

This research employs a quantitative descriptive approach with secondary data analysis techniques to examine SLOMPN UPI athlete performance achievements. Comprehensive data from the 2022-2023 period was collected from official documents covering 72 competition participations from 17 athletes out of a total of 19 athletes distributed across three sports: Taekwondo, Athletics, and Archery. This approach aligns with recent recommendations for evidence-based analysis of elite athlete development programs (Baker et al., 2024).

The analytical framework integrates multiple performance indicators following best practices in talent development evaluation (Johnston et al., 2020). Key metrics include:

(1) medal acquisition rate across different competition levels (provincial, national, international), (2) gold medal percentage as an indicator of competitive excellence, (3) individual athlete performance consistency, and (4) sport-specific contribution to overall program success. Data was systematically categorized based on athlete identity, sport branch, competition name, competition level, and achievement obtained. This methodological approach is consistent with recent methodological frameworks in talent identification research that emphasize the importance of comprehensive performance tracking (Barraclough et al., 2022; Collins et al., 2021). Each record includes athlete information, coach, sport branch, match number, event name and location, implementation time, and achievement category obtained.

Data analysis was conducted through several systematic stages. First, competition level categorization was performed based on event nomenclature into five categories: regency/city, provincial, regional, national, and international. Second, achievements were categorized into gold, silver, bronze medals, finalists, and other categories. Third, descriptive statistical calculations were performed including frequency, percentage, and distribution for various analysis dimensions. This analytical approach adopts best practices in performance analysis recommended in contemporary sports science literature (MacNamara & Collins, 2023). Several key indicators were calculated to evaluate coaching program effectiveness, including: (1) Success rate: percentage of participation producing medals from total participation, (2) Gold medal rate: percentage of gold medal acquisition from total participation, (3) Achievement ratio per athlete: average number of achievements obtained by each athlete, (4) Achievement distribution based on competition level, and (5) Individual performance consistency for top performers. These indicators have been validated in previous studies as reliable metrics for evaluating athlete coaching programs (Bergeron et al., 2021).

Interpretation of findings was conducted using the SPLISS theoretical framework (De Bosscher et al., 2023) and LTAD (Lloyd et al., 2020) to understand achievements in the broader context of athlete development systems. Comparison with international best practices and benchmarks from literature was used to evaluate the relative position of SLOMPN UPI achievements. This comparative approach is important for contextualizing findings in the global talent development landscape.

## RESULT AND DISCUSSION

### Results

Athlete Profile and Sport Branch Distribution. Research results show that SLOMPN UPI coaches 19 actively competing athletes during the 2022-2023 period with a total of 72 competition participations. 17 achieving athletes from the sport branch distribution show strong concentration in Taekwondo as the flagship sport with 64 achievements (88.9%), followed by Athletics with 6 achievements (8.3%), and Archery with 2 achievements (2.8%). Taekwondo dominance reaching almost 90% of total achievements indicates a specialization strategy consistently implemented in the institution's coaching program, consistent with findings by Collins et al. (2021) on the effectiveness of focused specialization in sport-specific schools.

**Table 1.** Achievement Distribution by Sport Branch

Sport Branch	Number of Athletes	Number of Achievements	Percentage
Taekwondo	13	64	88.9%
Athletics	3	6	8.3%
Archery	1	2	2.8%
Total	17	72	100%

*Source: Research data, 2023*

Achievement Performance by Medal Category. Achievement performance analysis shows very good performance with a high medal acquisition rate. From 72 competition participations, SLOMPN UPI athletes successfully obtained 68 medals with distribution: 43 gold medals (59.7%), 13 silver medals (18.1%), and 12 bronze medals (16.7%). Three participations resulted in finalist status (4.2%), and one was in other category (1.4%). Success rate in medal acquisition reached 94.4%, indicating very high coaching program effectiveness. Gold medal rate of 59.7% shows that the program focuses not only on participation but is oriented toward peak achievement, consistent with performance-oriented training principles advocated by Bergeron et al. (2021).

**Table 2.** SLOMPN UPI Achievement Performance Distribution

Achievement Category	Number	Percentage
Gold Medal	43	59.7%
Silver Medal	13	18.1%
Bronze Medal	12	16.7%
Finalist	3	4.2%
Other	1	1.4%
Total Participation	72	100%

*Source: Research data, 2023*

Achievement Distribution by Competition Level. SLOMPN UPI athletes have competed at various levels with the following distribution: provincial level 37 achievements (51.4%), national level 28 achievements (38.9%), regency/city level 5 achievements (6.9%), and international level 2 achievements (2.8%). There was no participation in multi-provincial regional level competitions. This distribution forms a competition pyramid showing that athletes have gone through pathway development from provincial to national level, although international exposure is still very limited. This distribution pattern is consistent with the developmental progression model proposed by Henriksen et al. (2020) and Sæther (2023b).

**Table 3.** Achievement Distribution by Competition Level

Competition Level	Number of Achievements	Percentage
International	2	2.8%
National	28	38.9%
Provincial	37	51.4%
Regency/City	5	6.9%
Total	72	100%

Source: Research data, 2023

For Taekwondo specifically, 50% of achievements were obtained at provincial level, 42.2% at national level, 4.7% at regency/city level, and 3.1% at international level. Participation in Seongnam Open International represents international exposure that serves as an important benchmark in the pathway toward world-class performance level. Athletics branch shows a distribution of 83.3% achievements at provincial level and 16.7% at national level, while Archery is still limited to regency/city level competitions. This data confirms the importance of progressive exposure as emphasized in recent literature on competitive development pathways (Wrang et al., 2022).

Major Competition Events. SLOMPN UPI actively participates its athletes in various prestigious competition events. Events with the most participation are: Kejuaraan Piala Bupati Bandung Barat Taekwondo Championship (13 achievements), Kejuaraan ITN Open VI Taekwondo (10 achievements), Kejuaraan Nasional Piala Kemenpora Spartan Taekwondo Championship (10 achievements), and Kejuaraan Nasional Piala Kemenpora Aligathor Championship (10 achievements). Participation in Kejurnas PPLP/PPLPD/SKO/SLOMPN (5 achievements) and POPNAS (2 achievements) shows that SLOMPN UPI athletes have become an integral part of the national athlete

development system. This high competition frequency is consistent with best practices in competitive periodization (Grix, 2010).

Achievement Analysis by Sport Branch. Taekwondo branch shows very impressive achievements with 64 achievements from 13 coached athletes. Success rate reaches 100% in medal acquisition with distribution of 42 gold (65.6%), 12 silver (18.8%), and 10 bronze (15.6%). Gold medal rate of 65.6% shows consistent dominance in competition. Coach-athlete ratio of 6.5:1 (2 coaches for 13 athletes) is within the ideal range for elite athlete coaching, consistent with coaching ratio recommendations in literature (MacNamara & Collins, 2023).

Athletics branch is still in developmental phase with 6 achievements from 3 athletes. Success rate of 16.7% with 1 gold medal indicates that the program is still in consolidation stage and requires strategic adjustments. Archery branch with 2 achievements from 1 athlete shows 100% success rate at initial level (regency/city) with acquisition of 1 silver and 2 bronze, which is a positive indicator for early development phase. This difference in success rate across branches reflects variability in stage of program maturity commonly occurring in multi-sport development contexts (Nakamura & Suzuki, 2024).

High-Achieving Athlete Profile. Individual performance analysis identifies adequate talent pool depth. The top ten athletes show achievement consistency with participation ranging from 4 to 8 competitions. Afif Febrianto stands out with 8 achievements and gold medal rate of 87.5% (7 gold from 8 competitions), placing him in the elite athlete category with very stable performance. Queenita Keisha Azzahra with 7 achievements and gold medal rate of 57.1% shows good consistency with medal variation, indicating an athlete transitioning toward established elite level. This athlete profile is consistent with characteristics of successful junior athletes identified in research by Baker et al. (2024).

**Table 4.** Profile of 10 High-Achieving SLOMPN UPI Athletes

Rank	Athlete Name	Sport	Achievements	Gold Rate
1	Afif Febrianto	Taekwondo	8	87.5%
2	Queenita Keisha Azzahra	Taekwondo	7	57.1%
3	Ellandro Atera Putra	Taekwondo	6	66.7%
4	Khansyalila Karamina	Taekwondo	5	60.0%
5	Dhia Ayu Pitaloka	Taekwondo	5	40.0%
6	Rava Atallah	Taekwondo	5	60.0%

Rank	Athlete Name	Sport	Achievements	Gold Rate
7-10	4 other athletes (Rye Al Kaysan, Jeanny C.T.C., Ghysa N.Z.R., Quinsha A.N.)	Taekwondo	4-5	40-80%

Source: Research data, 2023

Six other athletes (Ellandro Atera Putra, Khansyalila Karamina, Dhia Ayu Pitaloka, Rava Atallah, Rye Al Kaysan, Jeanny Chintya Tri Chaniarti) each achieved 5-6 achievements with gold medal rate ranging from 40-67%. The existence of multiple athletes with consistent achievements shows that program success does not depend only on one or two star athletes but is supported by a group of athletes with relatively homogeneous quality, which is important for long-term sustainability. This finding confirms the importance of talent pool depth as emphasized by (Yani et al., 2025).

Coaching Staff Contribution. The success of SLOMPN UPI athletes cannot be separated from the important role of coaching staff. The Taekwondo coaching team (Cepi Firmansyah and Fauzi Syahria Zein) successfully coached 13 athletes with a total of 63 achievements, showing high coaching effectiveness. Athletics coach (Rika Fardani) coached 3 athletes with 6 achievements, while Archery coach (Eliya Milka Eni) coached 1 athlete with 2 achievements. Ideal coach-athlete ratio and structured training program are keys to achievement success, consistent with emphasis on coach quality in recent coaching effectiveness literature (Amaral et al., 2021).

## **DISCUSSION**

Coaching Program Effectiveness. The 94.4% success rate achieved by SLOMPN UPI exceeds the standard success of athlete coaching programs generally ranging from 60-70%. This achievement is consistent with findings by Baker et al. (2020) emphasizing that effective coaching programs integrate multidimensional approaches with systematic monitoring and structured progression. The high success rate indicates several important aspects have been well implemented: effective selection system, structured training program, and adequate institutional support. Recent research by MacNamara & Collins (2023) confirms that integrated support systems are key determinants in achieving consistent high performance outcomes.

Achievement ratio per athlete of 4.2 shows high program efficiency, where resource investment for each athlete produces optimal achievement output. In the context of talent identification and development, this figure indicates that talent identification process has been conducted accurately, consistent with TID concept emphasizing the

importance of accurate early selection to maximize investment in athlete development (Barracough et al., 2022; Collins et al., 2021). High selectivity in recruitment allows focus of resources on athletes with the best potential, a strategy proven effective in resource-constrained environments contexts (De Bosscher et al., 2023).

Gold medal rate of 59.7% shows that the training program focuses not only on participation but is oriented toward peak achievement. In contemporary training periodization theory, peak performance achievement requires mature planning and appropriate periodization (Bergeron et al., 2021). Consistent achievement data at various competition levels shows that SLOMPN UPI has applied periodization principles well, with athletes' ability to peak at strategic times in the competition calendar. Study by (Grech et al., 2021) emphasizes that successful peaking strategies in youth athletes require careful balance between training loads and recovery periods.

High competition intensity with average participation frequency of 4.2 per athlete per year shows that the coaching program has entered intensive implementation phase. This high competition frequency is important for building competitive mentality and competitive experience of young athletes, consistent with Long-Term Athlete Development principles emphasizing the importance of competitive exposure in the training to compete phase. Competitive experience distributed at various levels provides valuable learning opportunities for holistic athlete development. Research by Sæther (2023) confirms that competitive frequency is a significant predictor for future elite performance.

Sport Branch Specialization: Strengths and Challenges. Taekwondo dominance (88.9%) reflects a specialization strategy that has proven effective. Success rate of 100% and gold medal rate of 65.6% show that resource concentration in one sport produces significant competitive advantage. This strategy is consistent with approaches applied by countries with successful sports systems, such as China and South Korea, which tend to concentrate resources on certain sports where they have competitive advantage (Mello & Lima, 2024; Venegas-Yazigi et al., 2023). identifies specialized training environments as one of the key characteristics of successful athletic career environments.

Several factors support this specialization success: accumulation of coach expertise in one specific branch, efficiency of facility and equipment investment, creation of strong achievement culture, ease of building networks with federations, and intensive

peer learning among athletes. However, research by Moesch et al. (2021) warns that early specialization carries risks including increased injury rates, burnout, and reduced intrinsic motivation. Therefore, it needs to be ensured that training programs integrate multilateral development principles and do not neglect the development of broad fundamental motor skills, as recommended in contemporary youth development frameworks (Lloyd et al., 2020).

High dependence on one sport also makes institutions vulnerable to federation policy fluctuations or competition rule changes. Sport branch diversification can function as risk management strategy and long-term sustainability. Development of Athletics and Archery branches, although still in early development phase, represents diversification efforts that need to be continuously encouraged with more strategic resource allocation. Collins et al. (Grech et al., 2021) emphasize the importance of portfolio approach in sport development for managing organizational risk and ensuring sustainable talent pipeline.

Competitive Progress and Readiness for International Level. Achievement distribution shows 51.4% at provincial level and 38.9% at national level, forming a competition pyramid indicating systematic pathway development. For Taekwondo, 50% achievements at provincial level and 42.2% at national level show that the majority of athletes are still in consolidation phase at national level. SPLISS framework emphasizes international competition exposure as one of the main pillars in elite athlete development (De Bosscher et al., 2024). Research conducted by Amaral et al. (2021) confirms that progression through competitive levels is a critical component in talent development pathways.

Limited international participation (2.8%) shows a significant gap in the pathway toward world-class performance. Research by Jang & Choi (2025) shows that international competitive experience is an essential element in transitioning from national to world-class performance. Limited international exposure can become a bottleneck in transition from national level excellence toward international competitiveness. Contemporary research by Oh et al. (2025) emphasizes that early international exposure, although not guarantee success, significantly increases probability of achieving elite status later.

Several factors that may contribute to limited international exposure include: budget limitations for international competitions requiring high travel costs, lack of

information and access to international competition calendars, athlete readiness considerations, and limitations in international ranking and qualification systems. To bridge this gap, a phased strategy is needed including: identification of top performer athletes ready for international exposure, partnerships with federations for broader competition access, special budget increase, and comprehensive pre-international competition preparation program. Venegas-Yazigi et al. (2023) recommend a phased approach for introducing young athletes to international competition scene.

Individual Performance Analysis and Talent Pool Development. Afif Febrianto with 8 achievements and gold medal rate of 87.5% shows elite athlete characteristics with mature psychological readiness, high technical proficiency, and ability to maintain performance under pressure. In talent development context, athletes like Afif are strong candidates for acceleration programs toward more intensive international competition. His performance consistency reflects successful implementation of structured training program and effective periodization. Research by Cowden et al. (2021) identifies mental toughness and self-regulation as key psychological attributes that distinguish consistently high performers from inconsistent performers.

Queenita Keisha Azzahra with 7 achievements and gold medal rate of 57.1% shows characteristics of an athlete in transition from emerging talent toward established elite. Variation in medal acquisition indicates a phase of developing peak performance consistency, which is normal in young athlete development. Research by Baker et al. (2023) emphasizes that talent development pathway is rarely linear and requires individualized approach adapted to specific needs of each athlete. further emphasize the importance of psychological skills training in helping athletes navigate transition phases in their career development.

The existence of 6 athletes with 5 or more achievements shows adequate depth of talent pool. This depth is important for long-term sustainability and creating competitive internal environment that encourages continuous improvement. Variation in gold medal rate (40-87.5%) shows differences in stage of development and indicates the need for individualized training program. Recent talent development framework emphasizes importance of personalized approaches considering biological maturation, psychological readiness, and social context of each athlete (Johnston et al., 2020; Sæther,

2023b).Advocates athlete-centered approach that empowers athletes in their own development journey.

Implications for National Sports System Development. SLOMPN UPI's success demonstrates the effectiveness of sport-specialized school model in integrating academic education with sports coaching. Success rate of 94.4% shows that this model is capable of creating conducive environment for young athlete development without neglecting formal education aspects. Several key factors that can be replicated include: strict selection system, ideal coach-athlete ratio, structured training program, high competition frequency, and institutional support from university. Henriksen et al. (2020) identifies integrated support systems as hallmark of successful athletic talent development environments (ATDEs).

Affiliation with Universitas Pendidikan Indonesia provides several strategic advantages: access to academic expertise in sports science, research and testing facilities, sustainable funding mechanism, and integration with higher education programs for post-career pathway of athletes. This collaboration model of sport-specialized school with university can become a template for developing other sport-specialized schools, enabling application of evidence-based coaching practices and systematic continuous monitoring and evaluation. (Stambulova et al., 2020) Emphasizes that university partnerships are critical success factor in sustainable elite sport development systems.

With 28 achievements at national level and 2 international achievements, SLOMPN UPI has contributed significantly to national athlete pipeline, especially for Taekwondo. Participation in Kejurnas PPLP/PPLPD/SKO/SLOMPN, POPNAS, and other national competitions shows that SLOMPN UPI athletes have become an integral part of national athlete development system. Several top performer athletes have potential to enter national talent pool and contribute to major international competitions such as Asian Games or Youth Olympic Games. Emphasize the importance of clear pathways from grassroots to elite levels in creating sustainable talent pipelines.

Limitations and Further Research Recommendations. This research is cross-sectional with limited period (2022-2023). For comprehensive understanding of coaching program effectiveness, longitudinal studies are needed tracking athlete development over longer time periods, ideally until they reach senior elite level. Longitudinal studies are also important for analyzing retention rate, transition success, and long-term athlete

development outcomes (Baker et al., 2023; Wrang et al., 2022). This research does not analyze competition quality in depth, where not all national or international competitions have the same quality. Further research needs to consider factors such as competition quality indicators recommended by Barraclough et al. (2022) for more sophisticated analysis. Qualitative studies exploring athlete and coach perspectives will also provide valuable insights about psychological and social dimensions of development process .

## **CONCLUSION**

This research shows that SLOMPN UPI has made significant contributions to developing young high-achieving athletes with a 94.4% success rate and 59.7% gold medal rate. This success is supported by an effective selection system, ideal coach-athlete ratio (6.5:1), structured training programs, and strategic university collaboration. Taekwondo dominance (88.9%) demonstrates an effective specialization strategy with a 65.6% gold medal rate, while Athletics and Archery remain in developmental phases. Performance distribution shows systematic pathway development from provincial level (51.4%) to national (38.9%), but limited international exposure (2.8%) represents a critical area requiring attention.

Individual performance analysis identifies adequate talent pool depth with 10 athletes achieving consistent performance. The sport-specialized school model integrated with universities proves effective and can serve as a blueprint for developing similar institutions. However, for long-term sustainability, increased international exposure, sport diversification, and development of longitudinal monitoring systems are needed. SLOMPN UPI's success reinforces the proposition that systematic investment in school-age athlete development can yield significant returns in the form of nationally caliber athletes with international potential.

Practical implications of this research include: (1) replication of the SLOMPN UPI development model for other sport-specialized schools with contextual adaptations, (2) increased budget allocation for international competitions, (3) development of partnerships with international federations for broader competition access, (4) implementation of data-based monitoring and evaluation systems for continuous improvement, and (5) development of sport diversification strategies for risk management and sustainability. Further research with longitudinal approaches and multidimensional

analysis will provide more comprehensive understanding of factors affecting long-term success in young athlete development.

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