Original article

AN ANALYSIS OF MANAGEMENT FACTORS INFLUENCING THE EXCELLENCE OF THAI NATIONAL PÉTANQUE ATHLETES

Jasiruk TUNGUDOMPOP[1] and Chattayaporn SAMERJAI[2]

[1]*Student, Master of Business Administration Program, Rajapruk University, Nonthaburi, THAILAND*

[2]*Faculty of Business Administration, Rajapruk University, Nonthaburi, THAILAND*

ABSTRACT

This research aimed to examine the management factors, athlete development, and excellence among Thai national pétanque athletes, as well as to analyze the influential factors contributing to their success. The sample consisted of 125 participants, including team managers, coaches, and athletes. Data were collected through a questionnaire with a reliability coefficient of .91. The data were analyzed using descriptive statistics, Pearson's correlation coefficient, and stepwise multiple regression. The findings revealed that all dimensions of sports management were rated at a high level of importance, especially coaching and facilities. The regression model showed that facility and equipment (FE), sports organization and policy (SO), and sports fields (SF) significantly predicted athlete excellence. Additionally, sport participation (SP) and national/international competition (NI) significantly influenced athletes' competitive achievement. These insights can guide evidence-based policy decisions, coaching resource allocation, and national training program development to enhance athlete development strategies and guide policy priorities in the context of Thailand's elite pétanque program.

(Journal of Sports Science and Technology 2025; 25(2): 7-16)

(Received: 8 July 2025, Revised: 14 October 2025, Accepted: 28 October 2025)

KEYWORDS: Pétanque Athlete Excellence/ Sports Management/ Athlete Development/ Thai National Team

***Corresponding author**: Jasiruk TUNGUDOMPOP

Master of Business Administration Program, Rajapruk University, Nonthaburi, THAILAND

E-mail address: 67109610016@rpu.ac.th

INTRODUCTION

At the national level, sports play a crucial role in enhancing a country's reputation and reflecting the competency of its athletic development systems. Athlete competency encompasses physical, psychological, technical, and tactical capabilities, all of which are key factors contributing to competitive performance[1] Effective development of athletic excellence requires a systematic process supported by comprehensive and continuous management, including training planning, nutritional support, sports science, and sporting environments[2].

In Thailand, national pétanque athletes have consistently achieved outstanding results on the international stage, particularly in world championship tournaments. However, maintaining such excellence remains a significant challenge, highlighting the need for sustainable development through efficient management. According to Yuket et al. (2020), athletic excellence in pétanque is closely associated with systematic training and institutional support. Meanwhile, Nuonwijit et al. (2024) reported that resource limitations in equipment and sports science personnel hinder Thai athletes' performance development.

Although previous research has suggested a correlation between effective management and athlete success, few studies have taken a comprehensive approach that considers how various factors—such as managerial roles, coaching strategies, athlete behaviors, and the quality of training facilities—interact to influence athletic excellence. To address this, the SPLISS model (Sport Policy factors Leading to International Sporting Success)[3] offers a valuable framework by identifying key dimensions of sports policy and support systems that contribute to international sporting success. Developed by De Bosscher and colleagues, the SPLISS model highlights nine critical factors—including governance, financial support, coaching development, talent identification, and sports science—that collectively shape an athlete's performance environment.

This study seeks to fill the research gap by identifying and analyzing the key management-related elements influencing the high performance of Thai national pétanque athletes. By incorporating perspectives from managers, coaches, and athletes, the study aims to generate insights that can inform the development of evidence-based strategies aligned with international standards to support sustainable, long-term athlete development and success. Pétanque was chosen as the case study due to its unique characteristics, such as precision, tactical gameplay, and low physical contact. These features make the research findings applicable to other sports with similar attributes. Therefore, this study offers insights valuable both for pétanque and for sports with comparable characteristics.

RESEARCH OBJECTIVES

1. To examine the levels of opinion regarding various dimensions of sports management factors. This conceptual model is composed of seven variables related to sports management and athlete outcomes, including SF (Sports Facilities), SO (Sports Policy and Organizational Structure), AF (Athlete-related Factors), SP (Sports Participation), NI (National and International Competition Participation), PN (Participation in National and International Competitions), AC (Athletic Achievement / Sporting Success)
2. To assess the level of excellence among Thai national pétanque athletes.

3. To analyze the influence of sports management and athlete development factors on the excellence of Thai national pétanque athletes.

CONCEPTUAL FRAMEWORK

The development of athletes toward excellence requires consideration of both individual competencies and the broader sports management environment. This aligns with the framework proposed by Reid, Stewart, and Thorne (2004), who asserted that success in sports is the result of effective management across multiple dimensions, including planning, organizational structure, human resource management, training, and resource allocation.

This framework is further supported by Fletcher and Sarkar (2012), who emphasized that Olympic-level athlete excellence is not solely dependent on personal talent but is sustained through a robust support system. Key components include high-quality coaching, accessible infrastructure, and goal-oriented sports policies. In the Thai context, studies by Yuket et al. (2020) and Nuonwijit et al. (2024) confirmed that systematic training, team management, and institutional support are positively associated with athlete success in pétanque.

Nevertheless, existing studies often lack an integrative approach to connect these dimensions directly to behavioral outcomes and competitive results. Moreover, empirical research applying statistical modeling to assess such relationships in sport-specific contexts—such as pétanque—remains limited. Given the unique training and development features of pétanque, this study applies the Reid et al. (2004) framework in combination with contemporary findings to formulate a conceptual model consisting of four key dimensions: Managerial Factors (MF), Coaching Factors (CF), Athlete Factors (AF), and Facility and Equipment (FE). These factors are examined in relation to two outcome variables: Participation and Experience in national and international competitions (PN) and Achievement in Competition (AC).

RESEARCH HYPOTHESIS

Sports management and athlete development factors significantly influence the excellence of Thai national pétanque athletes.

RESEARCH METHODOLOGY

This study employed a quantitative research design with the objective of examining the levels of opinions regarding sports management factors, the success levels of national pétanque athletes, and the influence of sports management factors on athletic excellence.

Population and Sample

The population of this study comprised team managers, coaches, and national pétanque athletes under the supervision of the Pétanque Sports Association of Thailand for the year 2024, totaling 180 individuals. The sample size was determined using the formula developed by Krejci and Morgan (1970) for a known population size, with a confidence level of 95% and a margin of error of ±5%, The sample consisted of 125 athletes selected through simple random sampling from a population of 180 national pétanque athletes. This

method ensured that each individual had an equal chance of being selected, and a computer-generated randomization process was used to identify participants.

Research Instrument

The instrument used for data collection was a questionnaire developed by the researcher based on a review of relevant theories and prior research. The questionnaire consisted of four parts: Part 1 collected general demographic information of the respondents; Part 2 measured opinions on sports management factors across four dimensions—executives, coaches, athletes, and equipment and facilities; Part 3 assessed athletic excellence in terms of participation in competitions and performance outcomes; and Part 4 comprised open-ended questions for additional suggestions.

The questionnaire employed a 5-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree.” Content validity was examined by three experts, and the Index of Item-Objective Congruence (IOC) ranged from 0.67 to 1.00. The reliability of the instrument was tested using Cronbach's Alpha, which yielded a coefficient of .91, indicating a high level of internal consistency.

Data Collection Method

The data were collected by the researcher through direct distribution and retrieval of questionnaires from all sample participants. Each completed questionnaire was checked for completeness before proceeding to data analysis. The researcher developed a questionnaire using Google Forms and distributed the link to the sample group via the Line and Facebook applications. The collected data were then analyzed using statistical software.

Statistical Analysis

The data were analyzed using a statistical software package. Descriptive statistics—including frequency, percentage, mean, and standard deviation—were used to describe the general characteristics of the sample and the levels of opinions. Pearson’s correlation coefficient was employed to examine the relationships between variables. Stepwise multiple regression analysis was conducted to determine the influence of sports management factors on athletic excellence.

The appropriateness of the regression model was evaluated using the adjusted R^2 and statistical significance was set at the .05 level. Multicollinearity among independent variables was assessed using the Tolerance and Variance Inflation Factor (VIF), while the independence of errors was verified using the Durbin–Watson statistic, with values close to 2 indicating an acceptable level of error independence in the model.

Research Findings

The analysis of the relationships among independent variables revealed that several variable pairs exhibited very high correlations ($r \geq .80$), including FE and AF ($r = .809$), TI and CS ($r = .831$), and TI and SO ($r = .817$). These results indicate a potential risk of multicollinearity if these variables are simultaneously included in a regression model. Therefore, in the multiple regression analysis, only one variable from each highly correlated pair was selected, or the stepwise method was applied to minimize the impact of multicollinearity.

The correlation between the two dependent variables—participation in national and international competitions (PN) and athletic achievement (AC)—was at a level that did not pose multicollinearity concerns.

Thus, both variables could be appropriately used in separate multiple regression models to explore the factors influencing PN and AC directly in each respective dimension.

Table 1. Model Summary of Hierarchical Multiple Regression Predicting Participation in National and International Competitions (PN)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
4	.738[d]	.544	.529	.49203	1.835

a. Predictors: (Constant), SF

b. Predictors: (Constant), SF, SO

c. Predictors: (Constant), SF, SO, AF

d. Predictors: (Constant), SF, SO, AF, SP

e. Dependent Variable: PN

The results from hierarchical multiple regression analysis using PN as the dependent variable showed that the final model, which included four predictors—SF (sports facilities), SO (sports policy and organizational structure), AF (athlete-related factors), and SP (sports participation)—explained 54.4% of the variance in PN (R^2 = .544), with an adjusted R^2 of .529. The standard error of the estimate was .49203, indicating an acceptable level of predictive accuracy. The Durbin–Watson statistic was 1.835, confirming no issue of autocorrelation. Therefore, this model can be considered statistically significant and suitable for predicting athletes' participation attitudes.

Table 2. Coefficients of the Final Hierarchical Multiple Regression Model Predicting Participation in National and International Competitions (PN)

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
4	(Constant)	.296	.348		.850	.397		
	SF	.497	.092	.509	5.406	.000	.428	2.335
	SO	.392	.086	.356	4.567	.000	.625	1.599
	AF	.261	.088	.240	2.955	.004	.575	1.739
	SP	-.253	.104	-.245	-2.432	.017	.374	2.675

a. Dependent Variable: PN

The results for testing the goodness-of-fit of the multiple regression models, with participation in national and international competitions (PN) as the dependent variable, indicated that all models demonstrated statistically

significant differences in regression coefficients ($p < .001$). Notably, Model 4—which included four independent variables: SF (sports facilities), SO (sports policy and organizational structure), AF (athlete-related factors), and SP (sports participation)—yielded an F-value of 35.832 (df = 4, 120) with a significance level of 000. This finding confirms that the model significantly explains the variance in PN at a statistically significant level.

Table 3. Model Summary of Hierarchical Multiple Regression Predicting Achievement in Competition (AC)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
2	.501[b]	.251	.238	.54578	2.110

a. Predictors: (Constant), SP

b. Predictors: (Constant), SP, NI

c. Dependent Variable: AC

The multiple regression analysis with athletic achievement (AC) as the dependent variable revealed that the model comprising two independent variables—sports participation (SP) and participation in national and international competitions (NI)—was able to explain 25.1% of the variance in AC ($R^2 = .251$), with an adjusted R^2 of .238.

Although the model explains a relatively modest proportion of the variance, both SP and NI were found to have a statistically significant influence on AC. This suggests that these variables can serve as a foundation for developing strategies or improving approaches to enhance the success of stakeholders involved. The model also demonstrated an acceptable level of predictive accuracy, with a standard error of .54578 and a Durbin–Watson statistic of 2.110, indicating no issue of autocorrelation.

Table 4. Coefficients of the Final Hierarchical Multiple Regression Model Predicting Achievement in Competition (AC)

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
2	(Constant)	2.009	.364		5.515	.000		
	SP	.265	.085	.294	3.119	.002	.690	1.450
	NI	.266	.092	.273	2.893	.005	.690	1.450

a. Dependent Variable: AC

The results indicated that the multiple regression model incorporating SP (sports participation) and NI (participation in national and international competitions) as independent variables significantly explained the variance in the dependent variable AC (athletic achievement) ($F = 20.410$, df = 2, 122, $p < .001$).

When compared with the model containing only SP ($F = 30.618$, $p < .001$), the inclusion of NI further reduced the standard error of the estimate and enhanced the overall accuracy of the model. This improvement suggests that the final model is statistically significant and achieves an acceptable level of model fit.

DISCUSSION

Although the descriptive statistics revealed that respondents rated all proposed management and development factors at a high level of importance, the multiple regression analysis demonstrated that only a limited number of variables—specifically sports participation (SP) and national/international competition exposure (NI)—had a statistically significant influence on athletic achievement (AC). This discrepancy suggests a potential gap between perceived importance and actual impact. In particular, while structural elements such as facilities, coaching, and policy were highly valued by participants, they did not significantly predict competitive excellence when tested in the regression model.

This phenomenon reflects what Reid, Stewart, and Thorne (2004) described as the challenge of "functional integration" within sports systems—where stakeholders may recognize various dimensions as essential, but only some translate into measurable outcomes. Similarly, Sport England (2022) emphasizes that access to infrastructure and policy must be converted into active participation and competition experience to produce results. Therefore, the findings of this study imply that not all highly rated management inputs directly contribute to competitive success unless they manifest through behaviorally engaged factors such as actual sport participation and international exposure.

Consequently, this insight highlights a critical issue for both policy and practice: While broad system support remains foundational, resource allocation and strategic emphasis should prioritize mechanisms that lead to measurable athlete engagement and competition readiness. Future research may explore the mediating role of behavioral and psychological variables—such as motivation, opportunity utilization, and competition frequency—in bridging the gap between perceived management quality and performance outcomes.

The study revealed that sports facilities (SF), sports policy and organizational structure (SO), athlete-related factors (AF), and sports participation (SP) significantly influenced participation in national and international competitions (PN). Additionally, SP and participation in national and international competitions (NI) had a significant effect on the athletic achievement (AC) of Thailand's national pétanque athletes. The findings can be interpreted and compared through relevant theoretical frameworks as follows:

The Influence of Structural Factors (SF and SO) on Participation in Competitions (PN)

The findings demonstrated that access to standardized venues, complete equipment, and supportive policies play a vital role in enabling athletes to participate in competitions. This aligns with the framework proposed by Reid, Stewart, and Thorne (2004), who asserted that sporting success results from effective management systems across dimensions such as organizational planning and resource allocation.

Furthermore, Sport England (2022) emphasized the importance of the "sporting environment," particularly infrastructure and supportive policy, which directly affect athletes' long-term competitiveness.

These findings reinforce that access to functional sports infrastructure and strategic, well-defined policies are fundamental conditions that promote participation in high-level competitions.

The study by Nuonwijit et al. (2024) also reported that limitations in fitness facilities, sports equipment, and nutrition budgets hinder the development of pétanque athletes. The present study supports these observations, suggesting that improving structural factors and establishing systematic policies will enhance Thai athletes' readiness for national and international competition.

The Influence of Athlete-Related Factors (AF) on Participation in Competitions (PN) Athlete-related factors such as determination, discipline, and intrinsic motivation were found to influence competition participation. This corresponds with Fletcher and Sarkar (2012), who argued that Olympic-level athletic excellence stems from internal attributes, including resilience, goal orientation, and sustained motivation, supported by strong external systems. Athletes with strong intrinsic drives are more likely to actively seek competitive opportunities and engage consistently.

Similarly, the study by Yuket et al. (2020) found that self-development behaviors and motivation were significantly associated with excellence among Thai national pétanque athletes. The current findings extend this understanding by showing that athlete motivation not only influences performance outcomes directly but also affects the frequency and readiness to participate in competitions—an essential foundation for experience accumulation and eventual success.

The Influence of Sports Participation (SP) and Competition Exposure (NI) on Athletic Achievement (AC) The findings also highlighted that promoting community engagement in sports—such as inspirational events, community support, and expanded competitive opportunities—significantly contributes to athlete success. This is consistent with the SPLISS model (Sports Policy factors Leading to International Sporting Success), which identifies public participation in sports and access to competitive opportunities as two of nine key pillars of international sporting success.

The research by Ardha et al. (2021) in Indonesia further confirmed that the success of youth pétanque athlete development depended on effective organizational management alongside the promotion of grassroots sports activities. In the Thai context, this study suggests that locally inclusive sports initiatives and sustained access to competition are key strategies for achieving athletic success.

Additionally, the study by **Pinru Phytanza et al. (2022)** found that pétanque athletes' shooting accuracy can be significantly improved through structured training, particularly when combined with actual competition experience. These findings reinforce the importance of competitive exposure in developing both technical skill and psychological readiness. This is consistent with the theory of **deliberate practice proposed by Ericsson, Krampe, and Tesch-Römer (1993)**, which emphasizes that excellence results not from innate talent but from sustained, purposeful training over time.

Recommendations

1. Policy Recommendations: Based on the findings indicating that sports policy (SO) and facilities (SF) significantly influence athletes' participation in competitions, national-level sports authorities—such as the

Ministry of Tourism and Sports, the Sports Authority of Thailand, and the Pétanque Sports Association of Thailand—should prioritize the development of long-term strategic policies. These policies should aim to support consistent training and international competition opportunities, with an emphasis on fostering collaboration with local and international organizations to expand competitive platforms for Thai athletes to continuously demonstrate their potential.

2. Practical Recommendations: The Pétanque Sports Association of Thailand should actively work to provide and enhance training and competition facilities systematically, including standard pétanque courts, modern training equipment, and dedicated sports science centers for pétanque athletes. Encouraging community-based pétanque programs and regularly organizing regional competitions would foster greater levels of sport participation (SP), which is a key determinant of athletes' success at national and international levels.

In addition, programs should be implemented to enhance athletes' psychological fitness, motivation, and self-discipline. The application of mental imagery training—proven to be effective in improving pétanque athletes' performance (e.g., Eka Abdurrahman, 2024; Pinru Phytanza et al., 2022)—is recommended as part of this development initiative.

3. Academic Recommendations: Although the SPLISS Model is widely recognized for identifying success factors in sports development, this study on the management factors contributing to the excellence of Thai national pétanque athletes found that respondents rated all proposed factors highly. However, the multiple regression analysis indicated that only SP (sports participation) and NI (national and international competition) significantly predicted athletic achievement (AC). This suggests that other factors—such as psychological capacity, family support, or intrinsic motivation—may also play critical roles and should be explored in future research.

It is also recommended that longitudinal studies be conducted to examine the long-term development of athletic performance, as well as the application of Structural Equation Modeling (SEM) to test causal relationships among variables influencing the excellence of national pétanque athletes.

REFERENCES

1.Al Ardha MA, Nurhasan, Wijaya A, Bana P, Fajar MK, Wicahyani S, Rizki AZRP. The evaluation of Pétanque organization management and youth athlete development in East Java Province, Indonesia. In: Proceedings of the International Joint Conference on Arts and Humanities 2021 (IJCAH 2021). 2021 Dec 24. p. 427-32. Atlantis Press. doi:10.2991/assehr.k.211223.074

2.Ericsson KA, Krampe RT, Tesch-Römer C. The role of deliberate practice in the acquisition of expert performance. Psychol Rev. 1993;100(3):363-406. doi:10.1037/0033-295X.100.3.363

3.Fletcher D, Sarkar M. A grounded theory of psychological resilience in Olympic champions. Psychol Sport Exerc. 2012;13(5):669-78. doi:10.1016/j.psychsport.2012.04.007

4.Krejcie RV, Morgan DW. Determining sample size for research activities. Educ Psychol Meas. 1970;30(3):607-10. doi:10.1177/001316447003000308

5.Nuawnwijit A, Piyasakulkiat O, Priyakorn P. A report on the development of competency among Thai national petanque athletes. Mahachulachokchasarn Journal. 2024;15(1):307-22.

6.Phytanza P, Burhaein E, Indriawan S, Lourenço CCV, Demirci N, Widodo P, Widiyono IP, Irawan YF, Sutopo WG, Parmadi M, Azizah AR, Saleh M, Hadiatmo A, Susanto A. Accuracy training program: Can improve shooting results of petanque athletes aged 15–20 years? Int J Hum Mov Sports Sci. 2022;10(1):121-30. doi:10.13189/saj.2022.100117

7.Reid C, Stewart E, Thorne G. Multidisciplinary sport science teams in elite sport: Comprehensive servicing or conflict and confusion? Sport Psychol. 2004;18:204-17.

8.Sport England. Talent Development Framework [Internet]. 2022 [cited 2025 Feb 19]. Available from: https://www.sportengland.org

9.Yuket N, Kaewchuay S, Rawangkan N, Noriya W. Factors promoting excellence of Thai national petanque athletes. J Health Educ Phys Educ Recreat. 2020;46(2):261-9. Thai.