



DEVELOPMENT OF STANDARDS FOR ASSESSING THE TRAINING LEVEL OF MALE VOVINAM ATHLETES FROM THE HO CHI MINH CITY TEAM AFTER ONE TRAINING CYCLE

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Abstract:

Establishing standardized evaluation criteria is an essential component of monitoring training effectiveness and optimizing athlete development. Assessing athletes' training level provides coaches with objective information regarding the suitability and effectiveness of training programs and serves as an important basis for planning, evaluating, and adjusting the training process. This study aimed to develop a standardized evaluation system for assessing the training level of male Vovinam athletes from the Ho Chi Minh City team following one year of training. The evaluation system incorporated anthropometric characteristics, physiological function, psychological function, physical fitness, and technical performance. The study employed document analysis and synthesis, anthropometric assessment, physiological function testing, psychological testing, pedagogical testing, and statistical analysis. Based on the collected data, a standardized scoring system and classification scale were developed and subsequently validated against competitive performance to confirm their practical applicability and effectiveness. Application of the proposed evaluation system showed that, at baseline, 2 athletes (20%) were classified as Good, 3 athletes (30%) as Average, and 5 athletes (50%) as Below Average. Following one year of training, the distribution improved, with 2 athletes (20%) classified as Good, 4 athletes (40%) as Average, and 4 athletes (40%) as Below Average. These findings demonstrate that the proposed evaluation system provides an objective and practical tool for monitoring athletes' training status and supports evidence-based decision-making in the planning and optimization of Vovinam training programs.

Keywords: evaluation standards, training level, training cycle, athletes, vovinam

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1. Introduction

Training level is a multifactorial construct comprising anthropometric, physiological, psychological, physical, technical, and tactical components that are progressively developed through the long-term effects of systematic training, competitive participation, and other supportive interventions.

Long-term training induces functional and structural adaptations in multiple organs and physiological systems, leading to continuous improvements in athletic performance. However, these adaptations do not occur in a strictly linear manner. Instead, the development of training level is characterized by the interaction of progressive adaptation and the cyclical nature of training periodization. Consequently, improvements in training level follow a spiral pattern of development, in which each training cycle builds upon previous adaptations while accounting for fluctuations associated with different phases of the training and competition calendar.

In high-performance sports training, systematically assessing an athlete's training level is considered a fundamental prerequisite for planning, monitoring, and optimizing the training process. Scientific assessment allows coaches to determine the athlete's current skill level, identify strengths and weaknesses, predict performance, and adjust training workloads in a personalized manner. Developing objective assessment standards that are scientific, reliable, and appropriate to the specific characteristics of each sport is an indispensable task in the training and development of athletes.

After a year-long training cycle, athletes undergo significant adaptation in terms of morphology, physiological function, psychology, physical fitness, and technique. Evaluating these changes through scientifically established standards provides an objective measure of training effectiveness and allows coaches to determine training goals according to the initial plan. Establishing standards and evaluation criteria based on data after a training cycle plays a crucial role in athlete training and management.

The purpose of this study is to establish a standard for evaluating the development of training levels of male Vovinam athletes from the Ho Chi Minh City team after a one-year training cycle. The research results provide a scientific basis for assessing the suitability of the training program, training volume, and exercises designed and implemented by the coaching staff throughout the annual training cycle. Furthermore, the results provide valuable insights for optimizing training strategies and improving the overall effectiveness of the training process for male Vovinam athletes from the Ho Chi Minh City team.

2. Materials & Methods

2.1 Participants

10 male Vovinam athletes from the Ho Chi Minh City team, whose competitive qualifications ranged from Level 1 athlete to Master level, were selected through convenience and random sampling methods for evaluating training level.

2.2 Methodology

2.2.1. Document Analysis and Synthesis Method

This method was employed throughout the research process. Relevant scientific documents, publications, and theoretical materials related to the research topic were systematically collected, reviewed, analyzed, and synthesized. The method served as the foundation for establishing the theoretical framework, formulating research hypotheses, defining research objectives, selecting appropriate research methods, and identifying evaluation criteria for assessing and verifying the research outcomes.

2.2.2. Anthropometric Testing Method

Anthropometric characteristics were assessed using three standard measurements: standing height. These indicators were used to evaluate the training level of the male Vovinam athletes from the Ho Chi Minh City team.

2.2.3. Physiological Function Testing Method

Anthropometric testing was conducted through a system of tests vital capacity (ml/kg); VO_{2max} (ml/min/kg) to assess the training level of male Vovinam athletes from the Ho Chi Minh City team.

2.2.3. Psychological Function Testing Method

Anthropometric testing is conducted through a system of tests assessing eye-hand reflexes, selection reflexes, and information processing ability to evaluate the training level of male Vovinam athletes from the Ho Chi Minh City team.

2.2.5. Pedagogical Testing Method

The pedagogical testing method was implemented through a system of specialized physical performance tests to evaluate the training level of male Vovinam athletes of the Ho Chi Minh City team.

2.2.6. Statistical Methods

To achieve the research objectives, statistical methods were employed to process and analyze the data collected throughout the study. The statistical parameters included the mean, standard error of the mean, variance, standard deviation, correlation coefficient (r), and hypothesis testing of the linear correlation coefficient. The Wilcoxon signed-rank test was applied to examine the homogeneity of the datasets obtained from the two interview rounds and to assess the reliability of the respondents' evaluations. All statistical analyses were performed using SPSS Statistics (version 26.0) and Microsoft Excel (version 365).

3. Results and Discussion

3.1. Developing a scoring system to assess the training level of male Vovinam athletes on the Ho Chi Minh City team

This study developed a scoring system and classification table to evaluate the training level of male Vovinam athletes from the Ho Chi Minh City team using the C-scale. The construction of the evaluation system was based on the following principles.

First, no scores were assigned to indicators that are not directly associated with Vovinam-specific athletic performance, including body weight and body mass index (BMI). These variables do not accurately reflect an athlete's physical fitness or training level; instead, they are used to determine whether body composition falls within the normal physiological range. Both excessively high and excessively low values may adversely affect physiological function, training capacity, and competitive performance. Therefore, BMI was evaluated and classified according to the World Health Organization (WHO) BMI classification criteria rather than being included in the scoring system.

Second, no scores were assigned to physiological indicators that primarily reflect adaptive responses to long-term training rather than athletic performance, including resting heart rate and the cardiac function index. A reduced resting heart rate is a well-recognized adaptation to endurance training and reflects cardiovascular remodeling associated with the athlete's heart syndrome, characterized by cardiac chamber enlargement, physiological myocardial hypertrophy, increased stroke volume, and a lower resting heart rate. However, excessively low heart rates may indicate pathological conditions rather than beneficial training adaptations. Consequently, the cardiac function index was evaluated using an established classification scale instead of being incorporated into the scoring system.

Third, information-processing ability, assessed using the Landolt Ring Test, was not included in the scoring system because it is interpreted according to a standardized normative classification.

Based on these principles, the following indicators were selected for inclusion in the training-level evaluation scale:

- Morphology - There is 1 indicator: Standing height (cm).
- Physiological Function - There are 2 indicators: Relative vital capacity (ml/kg); Relative VO_2max (ml/min/kg).
- Psychological - There are 2 indicators: Simple reflexes (ms); Complex reflexes (ms).
- Physical Fitness - There are 12 indicators: Handgrip strength (KG); Leg strength (KG); Back strength (KG); Standing long jump (cm); Supine crunch 30 seconds (repetitions); 30m sprint with high start (seconds); Cooper test (minutes); Trunk flexibility (cm); Lateral splits (cm); Long splits (cm); T-test (seconds); Hexagon jump (seconds).
- Technique - There are 7 indicators: Straight punch with each hand for 10s (repetitions); Straight punch with both hands continuously for 10s (repetitions); Straight punch with the triceps for 10s (repetitions); Punch straight back with both

hands at opposite targets 2.5m away for 30s (repeat); Kick straight forward with each leg for 10s (repeat); Side kick with the front leg for 10s (repeat); Side kick with the front leg at the target for 10s (repeat).

The study collected data at the beginning of the training cycle to build a scoring system and applied the developed system to assess the training level of the research subjects after one year of training.

The scoring system was developed using the mean ($\bar{X}$) and standard deviation (SD) of 22 selected indicators, comprising one anthropometric indicator, two physiological function indicators, two psychological function indicators, twelve physical fitness indicators, and seven technical performance indicators. These variables were converted into standardized scores using the C-scale to evaluate the training level of the male Vovinam athletes from the Ho Chi Minh City team.

According to Le Van Lam (2007) in Sports Measurement [6], the C-scale, also referred to as the Binet standard scale, is a standardized scoring system based on the mean and standard deviation of a dataset. A score of $C = 10$ corresponds to a value that is 2.5 standard deviations above the mean $x = \bar{x} + 2.5SD$, whereas a score of $C = 0$ corresponds to a value that is 2.5 standard deviations below the mean $x = \bar{x} - 2.5SD$. Intermediate scores are determined by dividing this range into equal intervals.

Based on this method, a standardized scoring table was established to evaluate the training level of the male Vovinam athletes from the Ho Chi Minh City team. The resulting C-scale is presented in Table 1.

Table 1: Scoring scale for evaluating the training level
of male Vovinam athletes of the Ho Chi Minh City team

Criteria	Scoring scale									
	1	2	3	4	5	6	7	8	9	10
[1]	156.32	158.95	161.58	164.22	166.85	169.48	172.12	174.75	177.38	180.01
[2]	55.36	58.35	61.33	64.32	67.31	70.29	73.28	76.27	79.26	82.24
[3]	45.36	46.66	47.97	49.28	50.58	51.89	53.19	54.50	55.81	57.11
[4]	203.81	200.86	197.90	194.95	191.99	189.04	186.08	183.13	180.17	177.22
[5]	488.70	475.23	461.75	448.28	434.80	421.33	407.85	394.38	380.90	367.43
[6]	40.11	41.92	43.73	45.54	47.36	49.17	50.98	52.79	54.60	56.42
[7]	108.71	110.66	112.61	114.55	116.50	118.45	120.39	122.34	124.29	126.24
[8]	103.35	105.59	107.83	110.06	112.30	114.54	116.77	119.01	121.25	123.48
[9]	239.41	249.03	258.66	268.28	277.90	287.52	297.14	306.77	316.39	326.01
[10]	17.17	17.83	18.48	19.14	19.80	20.46	21.12	21.77	22.43	23.09
[11]	5.04	4.88	4.72	4.56	4.40	4.23	4.07	3.91	3.75	3.59
[12]	2484.50	2539.82	2595.15	2650.47	2705.80	2761.13	2816.45	2871.78	2927.10	2982.43
[13]	8.33	7.79	7.24	6.70	6.16	5.62	5.08	4.53	3.99	3.45
[14]	4.27	4.02	3.78	3.54	3.30	3.06	2.82	2.58	2.33	2.09
[15]	4.43	4.17	3.92	3.66	3.40	3.14	2.88	2.63	2.37	2.11
[16]	10.76	10.61	10.46	10.31	10.16	10.01	9.86	9.71	9.56	9.41
[17]	16.16	15.95	15.75	15.55	15.34	15.14	14.94	14.73	14.53	14.33
[18]	16.31	17.06	17.81	18.55	19.30	20.05	20.79	21.54	22.29	23.04
[19]	15.80	16.42	17.05	17.67	18.30	18.93	19.55	20.18	20.80	21.43

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[20]	17.96	18.60	19.23	19.87	20.50	21.13	21.77	22.40	23.04	23.67
[21]	18.07	18.70	19.34	19.97	20.60	21.23	21.86	22.50	23.13	23.76
[22]	16.80	17.28	17.75	18.23	18.70	19.17	19.65	20.12	20.60	21.07
[23]	20.13	20.65	21.17	21.68	22.20	22.72	23.23	23.75	24.27	24.78
[24]	13.98	14.56	15.14	15.72	16.30	16.88	17.46	18.04	18.62	19.20
[25]	14.37	14.78	15.18	15.59	16.00	16.41	16.82	17.22	17.63	18.04
[26]	17.67	18.15	18.63	19.12	19.60	20.08	20.57	21.05	21.53	22.02
[27]	16.62	16.99	17.36	17.73	18.10	18.47	18.84	19.21	19.58	19.94
[28]	13.74	14.36	14.97	15.59	16.20	16.81	17.43	18.04	18.66	19.27

Notes: [1] Standing height (cm), [2] Relative vital capacity (ml/kg), [3] VO₂ max (ml/min/kg), [4] Simple reflexes (ms), [5] Complex reflexes (ms), [6] Handgrip strength (KG); [7] Back strength (KG); [8] Leg strength (KG); [9] Standing long jump (cm); [10] Supine crunch 30 seconds (repetitions); [11] 30m sprint with high start (seconds); [12] Cooper test (m); [13] Trunk flexion (cm); [14] Side splits (cm); [15] Front splits (cm); [16] T-test (s); [17] Hexagon jump (s); [18] Straight punch with dominant hand 10s (repetitions); [19] Straight punch with non-dominant hand 10s (repetitions); [20] Straight punch with both hands continuously 10s (repetitions); [21] Straight punch after 10s (repetitions) for the dominant leg; [22] Straight punch after 10s (repetitions) for the non-dominant leg; [23] Straight punch after 2 opposite targets 2.5m in 30s (repetitions); [24] Straight kick in front of the dominant leg for 10s (repetitions); [25] Straight kick in front of the non-dominant leg for 10s (repetitions); [26] Roundhouse kick with the dominant leg for 10s (repetitions); [27] Roundhouse kick with the non-dominant leg for 10s (repetitions); [28] Side kick with the front leg at the target for 10s (repetitions).

3.2. Develop a standardized classification system for evaluating the training level of male Vovinam athletes in the Ho Chi Minh City team

To facilitate the quantitative evaluation and classification of athletes' training levels, the total scores were classified into five performance categories based on the C-scale. The classification criteria were defined as follows:

- Excellent: 9.0–10.0 points,
- Good: 7.0 to < 9.0 points,
- Average: 5.0 to < 7.0 points,
- Below Average: 3.0 to < 5.0 points,
- Poor: 0 to < 3.0 points.

Based on these classification criteria and the standardized scoring system, a comprehensive evaluation scale was developed to assess the training level of the male Vovinam athletes from the Ho Chi Minh City team. According to the C-scale described in Section 3.1, each assessment criterion has a maximum score of 10 points. The evaluation system comprises one anthropometric indicator (maximum score = 10 points), two physiological function indicators (20 points), two psychological function indicators (20 points), twelve physical fitness indicators (120 points), and eleven technical performance indicators (110 points), resulting in a total of 28 assessment criteria with a maximum possible score of 280 points.

Based on the total score, a comprehensive classification table was established to evaluate the overall training level of the male Vovinam athletes from the Ho Chi Minh City team. The complete scoring and classification system is presented in Table 2.

Table 2: Summary of scores classifying the training level of
male vovinam athletes of the Ho Chi Minh City team

Criteria	Number of targets	Classify				
		Poor	Below Average	Average	Good	Excellent
Morphology	1	< 3	3 - < 5	5 - < 7	7 - < 9	9 - 10
Physiological Function	2	< 6	6 - < 10	10 - < 14	14 - < 18	18 - 20
Psychological	2	< 6	6 - < 10	10 - < 14	14 - < 18	18 - 20
Physical Fitness	12	< 36	36 - < 60	60 - < 84	84 - < 108	108 - 120
Technique	11	< 33	33 - < 55	55 - < 77	77 - < 99	99 - 110
Total	28	< 84	84 - < 140	140 - < 196	196 - < 252	252 - 280

Based on the scoring and classification systems presented in Tables 1 and 2, a normative classification table was developed to evaluate the training level of the male Vovinam athletes from the Ho Chi Minh City team for each individual assessment criterion at the initial evaluation stage. The resulting classification standards are presented in Table 3.

The normative classification table enables coaches and practitioners to evaluate each assessment criterion independently without the need to administer the entire test battery simultaneously. Athletes can therefore be assessed according to their anthropometric characteristics, physiological function, psychological function, physical fitness, and technical performance, consistent with the selected evaluation framework.

To facilitate practical application, the normative classification table was designed to be straightforward and easy to use. The evaluation procedure consists of the following steps:

- **Step 1:** Select the assessment domain (anthropometric, physiological, psychological, physical fitness, or technical performance) and locate the corresponding classification table.
- **Step 2:** Identify the specific assessment criterion to be evaluated.
- **Step 3:** Compare the athlete's test result with the corresponding classification standard to determine the performance level for that criterion.

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Table 3: Classification of morphological, physiological, psychological, physical fitness, and technical attributes of male vovinam athletes from the Ho Chi Minh City team

Criteria	Phân loại														
	Kém			Yếu			Trung bình			Khá			Tốt		
[1]	153.69	- <	161.58	161.58	- <	166.85	166.85	- <	172.12	172.12	- <	177.38	177.38	- <	180.01
[2]	52.37	- <	61.33	61.33	- <	67.31	67.31	- <	73.28	73.28	- <	79.26	79.26	- <	82.24
[3]	44.05	- <	47.97	47.97	- <	50.58	50.58	- <	53.19	53.19	- <	55.81	55.81	- <	57.11
[4]	206.77	- <	197.90	197.90	- <	191.99	191.99	- <	186.08	186.08	- <	180.17	180.17	- <	177.22
[5]	502.18	- <	461.75	461.75	- <	434.80	434.80	- <	407.85	407.85	- <	380.90	380.90	- <	367.43
[6]	38.29	- <	43.73	43.73	- <	47.36	47.36	- <	50.98	50.98	- <	54.60	54.60	- <	56.42
[7]	106.76	- <	112.61	112.61	- <	116.50	116.50	- <	120.39	120.39	- <	124.29	124.29	- <	126.24
[8]	101.12	- <	107.83	107.83	- <	112.30	112.30	- <	116.77	116.77	- <	121.25	121.25	- <	123.48
[9]	229.79	- <	258.66	258.66	- <	277.90	277.90	- <	297.14	297.14	- <	316.39	316.39	- <	326.01
[10]	16.51	- <	18.48	18.48	- <	19.80	19.80	- <	21.12	21.12	- <	22.43	22.43	- <	23.09
[11]	5.20	- <	4.72	4.72	- <	4.40	4.40	- <	4.07	4.07	- <	3.75	3.75	- <	3.59
[12]	2429.17	- <	2595.15	2595.15	- <	2705.80	2705.80	- <	2816.45	2816.45	- <	2927.10	2927.10	- <	2982.43
[13]	8.87	- <	7.24	7.24	- <	6.16	6.16	- <	5.08	5.08	- <	3.99	3.99	- <	3.45
[14]	4.51	- <	3.78	3.78	- <	3.30	3.30	- <	2.82	2.82	- <	2.33	2.33	- <	2.09
[15]	4.69	- <	3.92	3.92	- <	3.40	3.40	- <	2.88	2.88	- <	2.37	2.37	- <	2.11
[16]	10.91	- <	10.46	10.46	- <	10.16	10.16	- <	9.86	9.86	- <	9.56	9.56	- <	9.41
[17]	16.36	- <	15.75	15.75	- <	15.34	15.34	- <	14.94	14.94	- <	14.53	14.53	- <	14.33
[18]	15.56	- <	17.81	17.81	- <	19.30	19.30	- <	20.79	20.79	- <	22.29	22.29	- <	23.04
[19]	15.17	- <	17.05	17.05	- <	18.30	18.30	- <	19.55	19.55	- <	20.80	20.80	- <	21.43
[20]	17.33	- <	19.23	19.23	- <	20.50	20.50	- <	21.77	21.77	- <	23.04	23.04	- <	23.67
[21]	17.44	- <	19.34	19.34	- <	20.60	20.60	- <	21.86	21.86	- <	23.13	23.13	- <	23.76
[22]	16.33	- <	17.75	17.75	- <	18.70	18.70	- <	19.65	19.65	- <	20.60	20.60	- <	21.07
[23]	19.62	- <	21.17	21.17	- <	22.20	22.20	- <	23.23	23.23	- <	24.27	24.27	- <	24.78
[24]	13.40	- <	15.14	15.14	- <	16.30	16.30	- <	17.46	17.46	- <	18.62	18.62	- <	19.20
[25]	13.96	- <	15.18	15.18	- <	16.00	16.00	- <	16.82	16.82	- <	17.63	17.63	- <	18.04
[26]	17.18	- <	18.63	18.63	- <	19.60	19.60	- <	20.57	20.57	- <	21.53	21.53	- <	22.02
[27]	16.26	- <	46.33	17.36	- <	18.10	18.10	- <	18.84	18.84	- <	19.58	19.58	- <	19.94

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[28]	13.13	- <	14.04	14.97	- <	16.20	16.20	- <	17.43	17.43	- <	18.66	18.66	- <	19.27
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Notes: [1] Standing height (cm), [2] Relative vital capacity (ml/kg), [3] VO₂ max (ml/min/kg), [4] Simple reflexes (ms), [5] Complex reflexes (ms), [6] Handgrip strength (KG); [7] Back strength (KG); [8] Leg strength (KG); [9] Standing long jump (cm); [10] Supine crunch 30 seconds (repetitions); [11] 30m sprint with high start (seconds); [12] Cooper test (m); [13] Trunk flexion (cm); [14] Side splits (cm); [15] Front splits (cm); [16] T-test (s); [17] Hexagon jump (s); [18] Straight punch with dominant hand 10s (repetitions); [19] Straight punch with non-dominant hand 10s (repetitions); [20] Straight punch with both hands continuously 10s (repetitions); [21] Straight punch after 10s (repetitions) for the dominant leg; [22] Straight punch after 10s (repetitions) for the non-dominant leg; [23] Straight punch after 2 opposite targets 2.5m in 30s (repetitions); [24] Straight kick in front of the dominant leg for 10s (repetitions); [25] Straight kick in front of the non-dominant leg for 10s (repetitions); [26] Roundhouse kick with the dominant leg for 10s (repetitions); [27] Roundhouse kick with the non-dominant leg for 10s (repetitions); [28] Side kick with the front leg at the target for 10s (repetitions).

3.3. Applying standardized testing criteria to assess the training level of male Vovinam athletes from the Ho Chi Minh City team

To verify the objectivity and practical applicability of the proposed evaluation system, the assessment criteria comprising anthropometric, physiological, psychological, physical fitness, and technical performance indicators were applied to male Vovinam athletes from the Ho Chi Minh City team. Competitive performance was used as the external criterion (gold standard) to examine the validity of the overall training-level score derived from the proposed evaluation system. The results of the validation are presented in Table 4. To protect the confidentiality of the athletes' personal information, the identities of the 10 male Vovinam athletes were anonymized and coded as Athlete 1 through Athlete 10.

Table 4: Summary Score Sheet for Assessing the Current Training
Level of Male Vovinam Athletes from the Ho Chi Minh City Team

Athlete	Competition Performance	Total Score of Factors					Overall Score	Classification
		Morphology	Physiological Function	Psychological	Physical Fitness	Technique		
Athlete 1	1	9.0	16.5	15.5	94.5	89.0	224.5	Good
Athlete 2	4	5.5	11.5	11.0	64.5	48.5	141.0	Average
Athlete 3	8	2.5	7.5	4.5	46.5	46.5	107.5	Below Average
Athlete 4	10	4.5	6.5	5.5	38.5	44.0	99.0	Below Average
Athlete 5	2	7.0	14.0	13.5	81.5	81.0	197.0	Good
Athlete 6	7	3.5	8.5	10.0	50.0	35.5	107.5	Below Average
Athlete 7	3	6.0	13.0	13.0	76.0	67.0	175.0	Average

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Athlete 8	9	4.5	4.0	6.0	40.0	45.0	99.5	Below Average
Athlete 9	6	3.0	8.0	9.5	40.0	50.0	110.5	Below Average
Athlete 10	5	5.0	10.0	12.5	66.5	46.0	140.0	Average

The standardized classification system developed in this study was applied to evaluate the training level of the male Vovinam athletes from the Ho Chi Minh City team after one year of training. The evaluation was based on anthropometric, physiological, psychological, physical fitness, and technical performance indicators. The assessment results are presented in Table 5.

Table 5: Summary Score Sheet for Evaluating the Training Level of Male Vovinam
Athletes from the Ho Chi Minh City Team Following One Year of Training

Athlete	Competition Performance	Total Score of Factors					Overall Score	Classification
		Morphology	Physiological Function	Psychological	Physical Fitness	Technique		
Athlete 1	1	9.0	19.5	17.0	115.5	110.0	271.0	Excellent
Athlete 2	4	5.5	14.5	11.5	86.5	105.0	223.0	Good
Athlete 3	8	4.5	10.0	6.0	75.0	94.0	189.5	Average
Athlete 4	10	4.5	11.0	7.5	69.5	82.0	174.5	Average
Athlete 5	2	7.0	19.0	14.5	106.0	103.5	250.0	Excellent
Athlete 6	7	3.5	12.5	11.0	75.0	88.0	190.0	Average
Athlete 7	3	6.0	14.0	14.5	99.0	100.0	233.5	Good
Athlete 8	9	4.5	8.0	8.5	74.5	97.5	193.0	Average
Athlete 9	6	3.0	12.0	11.0	83.0	102.0	211.0	Good
Athlete 10	5	5.0	13.0	13.5	93.0	108.0	232.5	Good

After summarizing the training-level assessment scores of the male Vovinam athletes from the Ho Chi Minh City team at baseline and following one year of training (Tables 4 and 5), the relative contributions (%) of the anthropometric, physiological, psychological, physical fitness, and technical performance domains to the overall training level were calculated and ranked. The results are presented in Table 6.

Table 6: Summary table of ranking factors for evaluating the performance of male Vovinam athletes from the Ho Chi Minh City team

Criteria	Ranking				
	Excellent	Good	Average	Below Average	Poor
Initial phase					
Morphology	10.00%	10.00%	30.00%	40.00%	10.00%
Physiological Function	0.00%	20.00%	30.00%	40.00%	10.00%
Psychological	0.00%	10.00%	50.00%	20.00%	20.00%
Physical Fitness	0.00%	10.00%	40.00%	50.00%	0.00%
Technique	0.00%	20.00%	10.00%	70.00%	0.00%
Total	0.00%	20.00%	30.00%	50.00%	0.00%
After a year of training					
Morphology	10.00%	10.00%	30.00%	50.00%	0.00%
Physiological Function	20.00%	20.00%	50.00%	10.00%	0.00%
Psychological	0.00%	30.00%	40.00%	30.00%	0.00%
Physical Fitness	10.00%	40.00%	50.00%	0.00%	0.00%
Technique	60.00%	30.00%	10.00%	0.00%	0.00%
Total	20.00%	40.00%	40.00%	0.00%	0.00%

The best performance results of the research subjects in the competitions studied are statistically presented in Table 7.

Table 7: The best performance of male Vovinam athletes from the Ho Chi Minh City team in various tournaments

Athlete	Sports achievements	Competition category	Tournament name
Athlete 1	Gold medal	men's basic technical team	National Championship
Athlete 2	Gold medal	Men's 72kg Sparring	National Championship
Athlete 3	Silver medal	Men's 45kg Sparring	National Championship
Athlete 4	Bronze	Men's 64kg Sparring	National Championship
Athlete 5	Gold medal	Men's 57kg Sparring	National Strong Teams Tournament
Athlete 6	Bronze	Men's 64kg Sparring	National Strong Teams Tournament
Athlete 7	Gold medal	men's basic technical team	National Championship
Athlete 8	Gold medal	men's basic technical team	National Championship
Athlete 9	Gold medal	Men's 54kg Sparring	National Strong Teams Tournament
Athlete 10	Gold medal	men's basic technical team	National Championship

The combined training-level scores presented in Tables 4 and 5 indicate that, at baseline, the distribution of training levels among the male Vovinam athletes was as follows: 2 athletes (20%) were classified as Good, 3 athletes (30%) as Average, and 5 athletes (50%) as Below Average. Following one year of training, the distribution shifted to 2 athletes (20%) classified as Good, 4 athletes (40%) as Average, and 4 athletes (40%) as Below Average. These findings demonstrate an overall improvement in the athletes' training levels after one year of systematic training, with the majority of athletes achieving an Average level or higher.

Comparison of the comprehensive training-level assessment with competitive performance revealed a close correspondence between the proposed evaluation system and actual competition results. Athletes 1 and 5, who achieved the highest competitive performance within the team, also obtained the highest overall training-level scores across the anthropometric, physiological, psychological, physical fitness, and technical performance domains. In contrast, Athletes 3 and 9 received relatively lower overall scores. These athletes had previously demonstrated strong performances at the youth level and were recently promoted to the senior team. Athlete 3 competed in the 45 kg weight category, while Athlete 9 competed in the 54 kg weight category. Consequently, their anthropometric characteristics, physiological function, and physical fitness scores were lower than those of athletes competing in heavier weight categories, resulting in lower overall scores. However, both athletes were 18 years of age and remained in a period of continued physical and physiological development. Furthermore, their technical performance scores were comparable to, or higher than, those of several senior teammates, indicating a high level of sport-specific technical proficiency. These findings suggest that although the current evaluation system yields lower overall scores for younger athletes competing in lighter weight categories, their technical abilities have already reached a competitive standard. Therefore, individualized training programs emphasizing anthropometric development, physiological adaptation, and physical fitness enhancement are recommended to support their long-term athletic development and future competitive performance.

Overall, the validation results indicate that the proposed training-level evaluation standards are appropriate and practically applicable. The comprehensive assessment system, incorporating anthropometric, physiological, psychological, physical fitness, and technical performance indicators, demonstrated good agreement with actual competitive performance. These findings support the validity of the proposed evaluation standards as an objective tool for monitoring athletes' training status, identifying individual strengths and weaknesses, and providing scientific guidance for training planning and talent development.

4. Conclusion

The study developed a standardized scoring system and classification scale for evaluating the training level of male Vovinam athletes from the Ho Chi Minh City team. The proposed evaluation system integrates anthropometric characteristics, physiological function, psychological function, physical fitness, and technical performance, and was validated against competitive performance to ensure its practical applicability and effectiveness.

Aknoloedegement

The source material for this article is derived from research conducted during the author's educational science thesis.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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