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RESEARCH ARTICLE **OPEN ACCESS**

Innovative Performance Evaluation of Personal Fitness Trainer: Rating Scale Development of Performance Index

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Abstract:

Aims: This research aimed to develop a performance index for personal fitness trainers (PIPFT) and validate the PIPFT.

Methods: The research methodology was divided into two parts: part 1 was based on the development of a draft PIPFT through focus group discussions with 14 experts, including academic specialists, fitness center business entrepreneurs, and experienced personal fitness trainers. Part 2 involved the validation of the quality of the draft PIPFT, consisting of three tests: firstly, for validity, where five experts evaluated content validity and obtained an average Item Content Validity Index (I-CVI) of 0.95; secondly, for reliability; and thirdly, for objectivity, where the draft PIPFT, which was improved to the field-test PIPFT, was then tested on 30 personal fitness trainers, with simultaneous evaluations by two assessors, achieving correlation coefficients of 0.93 and 0.94, respectively.

Results: Therefore, the field-test PIPFT is considered to be of high quality, demonstrating acceptable validity, excellent reliability, and excellent objectivity. The PIPFT consists of four dimensions and uses a 5-level rubric with a total score of 100 points.

Conclusion: This innovation can be used by fitness center business operators to genuinely assess the performance of personal fitness trainers.

Keywords: Personal fitness trainer, Fitness center, Performance appraisal, Human resource management, Fat-mass to fat-free-mass ratio.

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1. INTRODUCTION

Personal fitness trainers play a pivotal role in the success of fitness center businesses [1]. In today's digital era, following the COVID-19 pandemic, fitness centers that rely on trainers as the primary service providers to meet business goals depend on trainers' ability to adapt personal and group training methods to suit customer needs and the evolving technological landscape [2].

However, the process of hiring trainers often encounters challenges, particularly in evaluating their skill levels to determine appropriate compensation. Most fitness center operators assess the capabilities of the trainers based on educational qualifications, relevant certifications, or demonstrations of personal training and sales skills through role-play. Decisions about hiring and salary are then made based on these evaluations [3, 4]. Moreover, personal trainer standards are a significant and influential marketing factor that affects the business performance of fitness centers [5]. Such assessments tend to be subjective, lacking quantitative data to support decision-making.

International methods for assessing trainer capabilities also face limitations when applied to Thailand's sports industry context. These include outdated competency dimensions, failure to provide comprehensive quantitative assessments [6], and complex performance indicators that are impractical for evaluating services offered by trainers. For example, certain metrics may focus exclusively on either personal or group training. One such metric is average group exercise participation, calculated by dividing the total number of participants by the number of group classes. However, this metric is not applicable to trainers who do not conduct group classes. Another example is lifetime customer value, which is determined by multiplying the average revenue per customer by the average membership duration [7].

Consequently, trainer evaluation methods must be modernized to align with current fitness center business contexts and follow research tool validation principles [8]. These methods should also be easily understandable by all stakeholders. The researchers propose assessing trainer capabilities using a "Performance Index," a straightforward term encompassing four components: knowledge [6], physique and attitude [4], sales success [7], and management skills [3]. The evaluation of physique and attitude will indirectly use the Fat-Mass to Fat-Free-Mass Ratio (FMFFMR), supported by research linking a trainer's FMFFMR with their physique and attitude.

The performance index represents the average of these four components, making it easily understandable for both trainers and operators. This quantitative framework serves as a valuable tool for human resource management decisions, including workforce development, performance appraisal, and career pathway planning. Ultimately, it contributes to the success and growth of fitness center businesses.

1.2. Research Objective

The objectives of this research are as follows:

1. To develop a performance index for personal fitness trainers.

2. To validate the performance index for personal fitness trainers.

2. METHODOLOGY

To achieve the two research objectives and align with the research framework, we designed a mixed-method research approach. The study was divided into two parts. Part 1 involved the development of the performance index. Using qualitative research methods, data were collected through focus group discussions. Part 2 was the validation of the performance index. Quantitative research methods were employed, including three tests: a validity test, a reliability test, and an objectivity test.

The relevant institutional ethics committee is the Institutional Review Board of Thailand National Sports University. However, ethical approval for this study was waived, as it involved minimal risk and participants provided informed consent without requiring institutional review. No approval number was issued.

2.1. Part 1: Development of the Performance Index

Participants were purposively selected from three groups related to the evaluation of the performance of personal fitness trainers. The first group consisted of academic experts, who provided insights into the principles of research tool quality validation. The selection criteria for academic experts included a master's degree or higher in a field related to educational measurement and evaluation, published research in recognized databases on research tool quality validation, and experience in exercising in fitness centers.

The second group consisted of fitness center entrepreneurs, who contributed perspectives on business operations. To be eligible, they needed to be actively operating a fitness center business as of 2024, be local-brand entrepreneurs in Chiang Mai (due to higher recruitment rates compared to international brands, such as Fitness First, Virgin Active, or We Fitness), and demonstrate a willingness to participate in the research.

The third group consisted of experienced personal trainers, who provided practical insights into capability evaluation. Eligible participants had previous work experience with international fitness center brands, held positions of team leader or higher, and are currently employed in the fitness industry.

Then, fourteen participants were selected, comprising three academic experts, seven entrepreneurs, and four experienced trainers. This sample size was deemed sufficient for qualitative research, requiring six to ten participants [9].

For the research instrument, semi-structured interview questions were developed to align with research tool quality validation principles, ensuring all components were interconnected and understandable to all stakeholders. The questions were refined to fit the fitness center business context by five experts with academic positions in business or sports management, over five years of human resource management experience in sports organizations, and an Item Content Validity Index (I-CVI) of 0.94, exceeding the acceptable threshold of 0.90 [10]. Key questions are 1) What should the performance index for personal trainers eva-

luate? 2) Should the index consist of four components: knowledge, physique and attitude, sales success, and management skills? 3) What should be the evaluation levels of the performance index? and 4) What forms or tools should be used for performance index assessment?

In data collection, focus group discussions were conducted online *via* Zoom, led by the research team leader. The discussions emphasized trustworthiness through four elements: credibility to be ensured by the moderator's 15+ years of interview experience, eliminating biases and verifying participants' understanding of questions; transferability achieved by anonymizing interview recordings and using non-identifiable codes; dependability, where data triangulation was applied, cross-referencing interview transcripts, notes, and direct participant confirmation; and confirmability, where interviews were conducted neutrally, with co-researcher observing interactions impartially. Throughout data collection, the moderator maintained self-awareness, observed participant reactions, and ensured personal biases did not influence the study.

Data analysis was operated in three steps: Open coding, breaking down interview data into initial codes; axial coding, categorizing related codes; and selective coding, summarizing the data into a draft performance index quality assessment model. This approach ensured an inductive analysis aligned with the study objectives.

2.2. Part 2: Validation of the Performance Index

The validation process for the performance index involved three key tests: validity, reliability, and objectivity. The details regarding the selection of experts, sample groups, assessors, tools, and data collection methods are as follows:

2.2.1. Test 1: Validity

The content validity of the draft performance index was assessed by a panel of experts. To prevent bias, these experts were separate from those involved in the index development process. The selection criteria for experts included a doctoral degree in sports management or business administration, academic rank of assistant professor or higher, and experience in fitness center activities. Five experts meeting these criteria were chosen to evaluate the draft performance index *via* an online Google Form. The research team analyzed the average Item Content Validity Index (I-CVI) and adjusted the draft index based on the experts' feedback to finalize the performance index for testing.

2.2.2. Tests 2 and 3: Reliability and Objectivity

The finalized performance index was tested on 30 personal fitness trainers, which was recommended by Saengloetuthai (2017) [8]. The trainers were recruited voluntarily from two fitness center brands in Chiang Mai: 14 from Brand A and 16 from Brand B. Most participants were male (23), with an average age of 24.6 years. Their professional experience ranged from 2 to 14 years, and five were certified as personal trainers by the American Council on Exercise (ACE). Two assessors evaluated these trainers simultaneously. The assessors were personal fitness trainers with expertise in evaluating trainer competencies, selected based on the following criteria: current role as head personal trainer or manager at a local fitness center brand in Chiang Mai and experience in assessing over 30 trainers for recruitment in the fitness center industry.

The tests for reliability and objectivity were conducted at the Thailand National Sports University, Chiang Mai campus. A test-retest method was employed, with two evaluations conducted one week apart. Before testing, the trainers and assessors were briefed on the objectives, procedures, and details of the performance index assessment. Both assessors evaluated the trainers during both sessions.

Reliability was determined by calculating the correlation coefficients between scores from the first and second tests for each trainer. Objectivity was assessed by calculating the correlation coefficients between the scores given by the two assessors during both sessions. Additionally, the internal consistency of the trainers' performance on individual components of the index was analyzed. Pearson's Product Moment Correlation Coefficient was used for all calculations, with statistical significance set at a level of 0.05.

3. RESULTS

The research findings for the development and validation of the performance index for personal fitness trainers were divided into two parts: the finalized performance index and the validation results of the performance index.

3.1. Part 1: The Finalized Performance Index

The finalized performance index consisted of four components: knowledge, physique and attitude, sales success, and management skills. The evaluation was conducted using a 5-level rubric with the following scoring criteria: Lowest level: less than 20 points; Low level: 21–40 points; Moderate level: 41–60 points; High level: 61–80 points; Highest level: 81–100 points. Details of the finalized performance index are presented in Table **1**.

3.2. Part 2: Validation Results of the Performance Index

The validation results of the performance index of the four tests are as follows: validity test results; the performance index has an average Item Content Validity Index (I-CVI) of 0.95, which is considered acceptable [10]. This indicates that the validity is at an acceptable level. Reliability test results: the performance index has a positive correlation coefficient of 0.93 between the scores from the first and second tests for personal fitness trainers, which is statistically significant at the 0.05 level. This indicates that the reliability is at an excellent level. Objectivity test results, the performance index has a positive correlation coefficient of 0.94 between the scores given by both assessors during the two tests, which is statistically significant at the 0.05 level. This indicates that the objectivity is at an excellent level. Internal correlation coefficient analysis results: the analysis of the internal correlation coefficients of the performance index shows a significant positive correlation at the 0.05 level (Table **2**).

Table 1. The finalized performance index.

Dimension	Testing Protocol/Instruments	Rating Scale					Remark
		Lowest < 20	Low 21–40	Moderate 41–60	High 61–80	Highest 81–100	
1. Knowledge - Knowledge related to being a personal fitness coach	- Evaluate based on supporting documents/certificates and - Evaluate through an interview, for example: Please explain your understanding of the exercise to us. What are the steps involved in exercising? Briefly describe how to design an exercise program for the interviewer. How important do you think injury prevention and management are to exercising?	- Currently pursuing a bachelor's degree. - Possess basic knowledge in personal fitness coaching (covering sports science and teaching fundamentals) at the minimum level.	- Currently pursuing a bachelor's degree. - Holds at least one certificate related to personal fitness coaching. - Possesses basic knowledge in personal fitness coaching.	- Holds a bachelor's degree. - Possesses at least three certificates related to personal fitness coaching. - Has intermediate knowledge in personal fitness coaching.	- Holds a bachelor's degree in a field related to sports science or - Possesses at least five certificates related to personal fitness coaching. - Has advanced knowledge in personal fitness coaching.	- Holds a master's degree or higher or - Holds a bachelor's or master's degree in a field related to sports science or - Has published at least two research articles related to personal fitness coaching in journals indexed in databases specified by the Office of the Higher Education Commission or - Possesses at least five certificates related to personal fitness coaching. - Has expert-level knowledge in personal fitness coaching.	May request certificates or photographs related to group fitness coaching.
2. Physique and Attitude - Body composition and perspective on the profession of a personal fitness coach	- Evaluate using a body composition analyzer based on bioelectrical impedance analysis (BIA) and/or - Evaluate through an interview, for example: How would you describe yourself? Please share your career goals as a fitness trainer. What is your perspective on this profession?	- Male Fat-Mass to Fat-Free-Mass Ratio (FMFFMR) greater than 0.34. - Female FMFFMR greater than 0.59. - Attitude towards being a personal fitness coach is at a level that requires improvement.	- Male FMFFMR greater than 0.24 but not exceeding 0.34. - Female FMFFMR greater than 0.40 but not exceeding 0.59. - Attitude towards being a personal fitness coach is at an acceptable level.	- Male FMFFMR not exceeding 0.24. - Female FMFFMR not exceeding 0.40. - Attitude towards being a personal fitness coach is at a moderate level.	- Male FMFFMR equal to or less than 0.24. - Female FMFFMR equal to or less than 0.40. - Attitude towards being a personal fitness coach is at a good level.	- Male FMFFMR less than 0.24. - Female FMFFMR less than 0.40. - Attitude towards being a personal fitness coach is at an excellent level.	Give more weight to the evaluation of attitude than physical appearance.
3. Sale Success - Past achievements in the profession of a personal fitness coach or methods to achieve success	- Evaluate through scenario-based models, or - Evaluate based on supporting documents/certificates, and/or - Evaluate through an interview, for example: What strategies or techniques do you use (or will you use) to close a sale? What is your highest sales (or coaching sessions per day) record?	- Unable to close a sale in the simulated scenario. - No evidence of success/experience related to sales.	- Able to close a sale in the simulated scenario, but not smoothly. - Has evidence of success/experience related to sales at an acceptable level.	- Able to close a sale in the simulated scenario. - Has evidence of success/experience related to sales at an intermediate level.	- Able to close a sale in the simulated scenario with expertise. - Has evidence of success/experience related to sales at a good level.	- Able to close a sale in the simulated scenario with mastery. - Has evidence of success/experience related to sales at an excellent level.	
4. Management Skills - Ability to manage personal fitness coaching sessions	- Evaluate through scenario-based models, or - Evaluate based on supporting documents/certificates, and/or - Evaluate through an interview, for example: Please briefly present the steps for scheduling a client appointment.	- Has management skills at an acceptable level, or - No evidence of experience in management below the level of assistant manager.	- Has management skills at an acceptable level. - Has evidence of experience in management below the level of assistant manager.	- Has management skills at an intermediate level. - Has evidence of experience in management at the assistant manager level.	- Has management skills at a good level. - Has evidence of experience in management at the assistant manager level or higher.	- Has management skills at an excellent level. - Has evidence of experience in management at the manager level.	The experience includes working as a part-time coach, an intern or assisting in coaching.

(Table 1) contd.....

Dimension	Testing Protocol/Instruments	Rating Scale					Remark
		Lowest < 20	Low 21-40	Moderate 41-60	High 61-80	Highest 81-100	
-	Explain the steps involved in your coaching sessions to give us a sense of your role as a trainer. What would you do if the power went out during a coaching session? If given the opportunity by the owner or business operator, how would you propose improving the trainer system or marketing in the business?	-	-	-	-	-	-

Table 2. The results of the analysis of the internal correlation coefficients.

Dimension	1. Knowledge	2. Physique and Attitude	3. Sale Success	4. Management Skills
1. Knowledge	-	0.89*	0.83*	0.86*
2. Physique and Attitude	-	-	0.87*	0.84*
3. Sale Success	-	-	-	0.84*
4. Management Skills	-	-	-	-

Note: *significant level at 0.05.

4. DISCUSSION

Based on the research objectives, a Performance Index for Personal Fitness Trainers (PIPFT) was successfully developed, exhibiting acceptable levels of validity, reliability, and objectivity. The discussion of the research results was divided into three key areas based on the findings: quality of the performance index, internal correlation of the performance index, and value of the research.

The performance index developed in this study follows academic principles and is considered of high quality. Specifically, it demonstrates acceptable validity, excellent reliability, and excellent objectivity. These findings align with the principles for evaluating research tool quality, where the assessment of tests, whether group-based or criterion-based, must consider the validity, reliability, objectivity, difficulty, and discriminating power [8]. The results from applying the finalized performance index to 30 personal fitness trainers showed that it effectively discriminates power levels in line with empirical data, which are as follows:

4.1. High Power Group (8 trainers)

These trainers mostly hold a bachelor's degree in a field related to sports science. They exhibit good physique and attitude, have expert-level sales experience in fitness products, and all hold team leader positions or higher.

4.2. Moderate Power Group (15 trainers)

These trainers generally do not have a bachelor's degree in sports science, leading to gaps in their ability to explain exercise programming knowledge fully.

4.3. Low Power Group (7 trainers)

Trainers in this group generally need to improve their body composition to meet fitness trainer standards and need to further develop their sales strategies.

4.4. Lowest Power Group (4 trainers)

This group consists of trainers still studying at the bachelor's level, with no sales experience and limited work experience, resulting in lower management skills. Thus, the performance index is deemed suitable for evaluating the competencies of personal fitness trainers in fitness center businesses.

Moreover, the four components of the performance index show a statistically significant positive correlation, indicating that the abilities of personal fitness trainers in each area are interconnected. Specifically, knowledge is highly correlated with physique and attitude (with an internal correlation coefficient of 0.89), and physique and attitude are highly correlated with sales success (with an internal correlation coefficient of 0.87). These findings are consistent with previous research, which found that personal fitness trainers in international fitness center brands with good physiques and attitudes are influenced by their knowledge, including self-perception of exercise ability, perceived exercise barriers, and commitment to exercise plans [4]. Additionally, factors in choosing personal trainers are influenced by both their knowledge and interpersonal relationship skills, as well as their expertise in health care, both practically and theoretically [11]. Furthermore, management skills are correlated with knowledge, physique and attitude, and sales success. In practice, it is often found that highly knowledgeable fitness trainers tend to have better problem-solving skills and can also propose business deve-

lopment strategies to fitness center operators. This finding is valuable for human resource development planning for entrepreneurs or managers, as enhancing the knowledge and physique/attitude of personal fitness trainers positively impacts their sales success and management skills.

CONCLUSION

The value of this research lies in the development of an innovation in sports for evaluating the competencies of personal fitness trainers. Innovation is defined as something new or different from the original, which may involve new ideas, methods, or equipment. A sports innovation should meet three key characteristics. The first is newness, which refers to something newly developed, which can be either an improvement of the existing or an entirely new creation. Second is knowledge and creativity, where innovation must be based on knowledge and creativity in its development rather than merely copying or repeating something. The third is benefits, whether the innovation should bring benefits in terms of work efficiency or commercial success. In other words, it should add value through development, and the benefits can be either measurable in monetary terms or non-monetary [12]. The performance index developed in this research meets all three characteristics of innovation. The PIPFT is a new tool designed to evaluate the competencies of personal fitness trainers. It is a process developed through the use of knowledge and creativity, not by copying or repeating existing methods but by referencing past evaluation models of personal fitness trainers [3, 4, 6, 7]. It is beneficial for fitness center entrepreneurs as it helps enhance the value of personal fitness trainers by selecting those who are most suited to the job and developing their capabilities, measured through the performance index. Therefore, it can be concluded that the PIPFT developed in this research fully meets the definition of sports innovation in all three aspects.

Finally, fitness center entrepreneurs should adopt the PIPFT as sports innovation to scale up their business to be an innovation-driven enterprise (IDE). Entrepreneurs could create a positive attitude in fundraising through personal trainer performance development for enrolling high-skilled talent investors from overseas, thus promoting fundraising for the Thai sports industry [13].

RESEARCH RECOMMENDATION

Recommendations for applying the research findings are as follows:

1. Fitness center entrepreneurs should use the performance index to assess the competencies of existing personal fitness trainers before using it to evaluate candidates for the position.

2. They can use the results of the performance index evaluation to plan specific developments for each trainer.

3. They may use the performance index results to determine rewards or promotions for personal fitness trainers.

Recommendations for future research are as follows:

1. Examine in depth how the scores are distributed within each 20-point division.

2. Assess the effectiveness of implementing the performance index system for personal fitness trainers.

3. Develop and test the quality of the performance index for other roles within fitness centers, such as managers, sales consultants, receptionists, and marketing staff.

AUTHORS' CONTRIBUTIONS

The authors confirm their contribution to the paper as follows: T.S.: Analysis and interpretation of results; D.C.: Draft manuscript. All authors reviewed the results and approved the final version of the manuscript.

LIST OF ABBREVIATIONS

I-CVI	=	Item Content Validity Index
IDE	=	Innovation-Driven Enterprise
PIPFT	=	Performance Index for Personal Fitness Trainers

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The relevant institutional ethics committee is the Institutional Review Board of Thailand National Sports University. However, ethical approval for this study was waived, as it involved minimal risk and participants provided informed consent without requiring institutional review. No approval number was issued.

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in the google drive at https://drive.google.com/file/d/1mGKsN7HCpGGpaICpgJhzdVkbgsdSZEsE/view?usp=sharing.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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REFERENCES

[1] Chankuna D. Confirmatory factor analysis of effective fitness centers in Bangkok metropolitan region. Acad J Instit Phys Educ 2018; 10(1): 65-76.

[2] Chankuna D, Chanthonsarasom A, Inchana K, Sukdee T, Sriboon N. Impact of COVID-19 on sport industry in Thailand. J Thai Natl Sports Univ 2021; 13(2): 263-76.
[3] Chankuna D. Structural equation model of effective fitness centers in Bangkok metropolitan and vicinity region. J Thai Natl Sports Univ 2020; 12(1): 85-96.
[4] Sukwong T, Sriramatr S, Chankuna D. Factors affecting exercise behavior and fat mass to fat-free mass ration of personal trainers. J Behav Sci Dev 2021; 13(1): 61-79.
[5] Chankuna D, Thanaiudompat T, Sukdee T. Efficiency assessment with data envelopment analysis for benchmarking fitness center business performance in Thailand. Sustain Bus Sust J 2023; 45(2): 1-21. http://dx.doi.org/10.58837/CHULA.CBSJ.45.2.1
[6] Chiu W-Y, Lee Y-D, Lin T-Y. Performance evaluation criteria for personal trainers: An analytical hierarchy process approach. Soc Behav Personal 2010; 38(7): 895-905. http://dx.doi.org/10.2224/sbp.2010.38.7.895
[7] 7 Key Performance Indicators (KPIs) to track as a personal trainer. Available from: https://www.trainerize.com/blog/key-performance-indicators-for-personal-trainers/
[8] Saengloetuthai J. Quality of instrument in research. J Res Curriculum Devel 2017; 7(1): 1-15.
[9] Sandelowski M. Sample size in qualitative research. Res Nurs Health 1995; 18(2): 179-83. http://dx.doi.org/10.1002/nur.4770180211 PMID: 7899572
[10] Ayre C, Scally AJ. Critical values for Lawshe's content validity ratio: Revisiting the original methods of calculation. Meas Eval Couns Dev 2014; 47(1): 79-86. http://dx.doi.org/10.1177/0748175613513808
[11] Ninpala P, Gulthawatvichai S. Factors affecting consumers' intention to employ personal trainer services of fitness center in Bangkok metropolis. J Sport Health Sci 2020; 21(1): 97-110.
[12] Sangnin K, Jadesadalug V. Creating an innovation in sport service business: A conceptual framework. J Health Phys Educ Recreat 2019; 45(2): 14-32.
[13] Chankuna D. Causal model of factors influencing the fundraising in Thai sports industry: Investment ecosystem evaluation for scale-up to innovation-driven enterprises. Asian J Bus Res 2024; 14(2): 60-80. http://dx.doi.org/10.14707/ajbr.240173