



A Proposed Model of Professional Development for Enhancing Managerial Levels in Sports Institutions

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Abstract
<p>Objectives. Management has become a cornerstone and essential process upon which administrative bodies and personnel rely to achieve their goals across various sectors, including economic, social, military, educational, and governmental domains. It serves to fulfill both collective and individual needs and enhances human effort with the effectiveness necessary to drive social progress and promote human welfare. These efforts are grounded in legal principles, scientific foundations, and accumulated administrative experience. In line with this perspective, the present study seeks to improve the administrative competencies of sports club employees. This is achieved by identifying the goals and importance of administrative training, assessing training needs, designing relevant training programs, and implementing a proposed model tailored to the needs of sports club staff.</p> <p>Materials and Methods.To accomplish these aims, the research employed a descriptive survey method. The sample consisted of 120 administrators drawn from three sports clubs: Maysan Sports Club, Tigris Sports Club, and Maysan Oil Sports Club. Each club contributed 40 administrators from their respective sports activity departments, providing a balanced and representative sample for analysis.</p> <p>Results. The results of the study demonstrated that well-structured administrative training programs contribute significantly to enhancing organizational efficiency and effectiveness. Moreover, such programs support the development of leadership skills and foster a culture of creativity and innovation among employees.</p> <p>Conclusion Based on these findings, the study concludes that administrative training plays a vital role in elevating the performance of sports club staff. By aligning human resource capabilities with organizational goals, these programs help build stronger institutions and promote sustainable development in the sports sector.</p>
<p>Keywords : Professional Development, Managerial Levels, Sports Institutions, Organizational Enhancement.</p>

Introduction

Management has become a cornerstone and a fundamental process on which administrative bodies and personnel rely to achieve their goals in various economic, social, military, educational, and governmental activities. It aims to satisfy both collective and individual needs and to enhance human efforts with the necessary effectiveness to drive social progress and promote human well-being. This is accomplished through a foundation of legal pillars, scientific principles, and accumulated experiences in administrative work.

Human Resources Development is an essential pillar of comprehensive development and its sustainability, given its central role in refining skills, enhancing capabilities, and developing human competencies in scientific, professional, and technical aspects. This is crucial to meet the demands of development and labor market needs (Umamaheswari, 2024).

On a global scale, human resources occupy a central place of attention as the most significant element of development. Both developed and developing countries focus their human development programs on scientifically grounded bases and on the optimal exploitation and refinement of skills, which has a profound impact on maximizing the utilization of human resources (Sapozhenkova et al., 2024). This focus on human resources is crucial because they directly affect the competitiveness of enterprises. Human resources contribute to the success of services or products by selecting qualified, creative workers and trainees who excel at their tasks. Additionally, they prepare them to navigate modern technologies and adapt to new trends in their field (Umamaheswari, 2024).

Over the years, there has been a noticeable shift in administrative preparation programs, particularly with the adoption of competency-based frameworks. These programs emphasize the importance of mastering administrative competencies that directly relate to real-world administrative roles (Ramadhan et al., 2023). However, the concept of professional competence, especially in sports management, has not received the same level of attention in the Arab world. Despite its wide application in developed countries, the concept of adequacy in sports management is still evolving and lacks a standardized definition. This lack of clarity often leads researchers to adopt procedural concepts tailored to the goals of their specific studies. In sports, the concept of adequacy considers multiple criteria, as the educational curriculum seeks to be comprehensive, covering various aspects of education (Bloomfield, 2024).

Moreover, various terms such as "skills," "competencies," "efficiencies," and "effectiveness" are frequently used to describe the ability of a sports administrator to perform professional tasks. Despite differences in terminology, they all refer to the qualities that define a successful sports administrator (Banwan Shareef, 2020). The role of the administrator is crucial to the success of any organization, as they are responsible for guiding the organization towards achieving its goals. An administrator's ability to persuade others and unify a group around a common purpose depends largely on their personality and administrative qualities. As societies evolve, so too do the responsibilities and demands placed on administrators, particularly in increasingly complex and fast-paced environments (Schwiter et al., 2021).

In the context of sports activity management, continuous training for managers in Egyptian Sports Clubs is vital for ensuring their efficiency and success. Given the rapid social, economic, and educational changes, as well as future challenges, managers must be well-prepared and continuously trained. However, the researcher's experience in the field of sports management reveals that many sports activity managers in clubs lack a clear understanding of their administrative duties, such as planning, organization, and scheduling. Often, the roles are not well-defined or specified, and administrators tend to follow outdated or supervisory systems (traditional/regular) rather than modern, efficient ones.

Given these challenges, the research aims to enhance the administrative competencies of sports club employees through the following objectives: 1) Identifying the goals and importance of administrative training for employees of sports institutions, 2) Assessing the administrative training needs of employees in sports institutions. 3) Designing appropriate administrative training programs for sports institution employees, 4) Implementing the proposed administrative model for employees in sports institutions.

Materials and Methods

Study Participants.

The study involved 120 administrators from the sports activity department of three sports clubs: Maysan Sports Club, Dijla Sports Club, and Maysan Oil Sports Club. Each club was represented by 40 administrators, totaling 120 participants selected as the research sample.

Study organization.

The organization of the study involved the design of a data collection tool in the form of a questionnaire, prepared by the researcher to assess the professional preparation required to improve the administrative level of employees in sports clubs. In the process of developing the questionnaire, the researcher conducted a survey of theoretical studies, scientific research, and personal interviews with a number of administrators from sports clubs (Maysan, Tigris, and Maysan Oil) to identify the training needs of sports activity managers to improve administrative efficiency. After designing the questionnaire with 41 phrases and 4 themes, it was reviewed by a group of 7 experts in sports management to ensure the relevance of the axes and phrases to the research topic. An exploratory study was also conducted to test the clarity and appropriateness of the wording of the questionnaire, involving 40 administrators from outside the main research sample.

Statistical analysis.

For statistical analysis, the researcher employed several methods to test the internal consistency and reliability of the questionnaire. The Pearson correlation coefficient was used

to measure the correlation between the phrases and the total score for each axis, as well as between the axes of the questionnaire. Additionally, Cronbach's Alpha coefficient was used to measure the internal consistency of each axis of the questionnaire, with results showing high reliability values ranging from 0.968 to 0.993. Descriptive and inferential statistical analysis techniques were also applied, including the calculation of percentages, arithmetic means, standard deviations, and one-way ANOVA. All of these statistical procedures were carried out to ensure the validity and reliability of the research findings.

Results

In order to achieve the research objective and in response to the questions raised, and within the limits of the research sample and the method used, the researcher presents his findings classified as follows:

Presentation and discussion of statistical semantics of the objectives of management training for employees of sports institutions:

Table 1. Statistical semantics of the goals of managerial training of employees of sports institutions (N=120)

Phrases	Mean	Standard deviation	Percentage ratio	The level
Providing employees with the required expertise to keep abreast of continuous scientific developments	2.625	0.723	87.50	Elevated
Eliminating a lot of administrative obstacles	2.758	0.622	91.94	Elevated
Development and development of knowledge, information and behavior of individuals and their increase.	2.225	0.614	74.17	Average
Raising the efficiency and effectiveness of the organization by achieving its set goals	2.742	0.601	91.39	Elevated
Providing employees with the required expertise to keep abreast of continuous scientific developments	2.625	0.662	87.50	Elevated
Make employees qualified and able to use modern management concepts	2.600	0.703	86.67	Elevated
Developing and developing leadership skills and encouraging the spirit of creativity of trainees	2.575	0.741	85.83	Elevated
Improving of supervision of administrative work within	2.575	0.741	85.83	Elevated

Enterprises				
Achieve a high level of efficiency and productivity at work.	2.683	0.661	89.44	Elevated
Improve and develop job-related management information	1.892	0.547	63.06	Average
The ability to use scientific methods in decision-making	2.575	0.741	85.83	Elevated
The ability to solve problems in a scientific way	2.583	0.729	86.11	Elevated
2.538	0.582	84.61	Elevated	

it can be concluded that the overall level of the statements regarding the objectives of managerial training in sports activity management within sports clubs is *high*, with a percentage of 84.61%. Among the total items, two statements were rated at an *average* level, with percentages ranging from 63.06% to 74.17%, while the remaining ten statements were evaluated at a *high* level, with percentages between 85.83% and 91.94%.

This high level may be attributed to the fact that managerial training objectives in sports activity management significantly contribute to enhancing administrative knowledge and skills related to management tasks. The training equips employees with the necessary competencies to cope with new and emerging developments in administration, improves the process of managerial supervision, and ensures that staff are kept up to date with ongoing scientific advancements. Additionally, it promotes leadership development, fosters creativity, and encourages innovation among trainees, which collectively support the achievement of high productivity in the workplace (Kooli & Abadli, 2022).

These findings align with the results of a study conducted by Melnyk (2021), which emphasized the design of a managerial development program for referees within the Football Federation. The program was shown to enhance the refereeing system and serve as a comprehensive administrative reference for managing matches in a fair and organized manner. It also involved the creation of a systematic program for the administrative preparation of referees (Melnyk et al., 2021).

Accordingly, the first research question—concerning the objectives of managerial training in the context of sports activity management within sports institutions—has been addressed. The discussion now proceeds to the statistical significance of the training needs of sports activity managers in such institutions.

Table 2. Statistical semantics of the training needs of sports activity managers in sports institutions (N=120)

Phrases	Mean	standard deviation	Percentage ratio	The level
The art of dealing with bosses and colleagues at work	2.425	0.857	80.83	Elevated
Organization and preparation of records related to sports activity in the Sports Club	2.608	0.737	86.94	Elevated
Legislation and administrative decisions related to sports activity	2.450	0.839	81.67	Elevated
Supervising the organization and preparation of records in the Sports Club	2.533	0.755	84.44	Elevated
Administrative updates related to sports activity	2.492	0.789	83.06	Elevated
Preparation of Sports Activity Plans at the activity level	2.692	0.658	89.72	Elevated
The skill of effective communication with administrative levels	2.717	0.651	90.56	Elevated
Analysis of the job description form	2	0.467	66.67	Average
Analysis of job requirements and new innovations at work	2.550	0.776	85.00	Elevated
Performance appraisal results	2.542	0.787	84.72	Elevated
2.501	0.658	83.36	Elevated	

As shown in Table (2), the overall level of statements regarding the training needs of sports activity managers in sports clubs is rated *high*, with a percentage of 83.36%. Among these, one statement was classified at an *average* level, receiving a score of 66.67%, while the remaining nine statements were rated at a *high* level, with percentages ranging from 80.83% to 90.56%.

This elevated level may be attributed to the essential role that administrative training programs play in identifying the specific developmental needs of sports activity managers. Such programs aim to enhance their administrative competencies, particularly in the area of effective communication across various management levels within the sports club—whether at the senior, middle, or executive level. In addition, these training initiatives focus on equipping managers with the skills to formulate activity plans and budgets for a wide range of sports disciplines. They also include training on how to maintain and organize administrative records related to sports activities, including files on athlete achievements and activity reports. Furthermore, managerial training contributes to the development of

interpersonal and professional skills necessary for interacting effectively with superiors and colleagues in the workplace (Nuriddinov, 2023).

These findings are consistent with those reported by Storm (2021), who highlighted the importance of administrative training programs in addressing the needs of physical education teachers and mentors. According to his study, such programs are designed to align with ongoing scientific advancements in sports management and play a key role in evaluating the progress of educators in improving the quality of the educational process. The study also emphasizes the need for an administrative body that oversees the planning and implementation of these training initiatives for educators and mentors in the field of sports education (Storm et al., 2021).

In light of the above, the second research question—concerning the identification of training needs for managers and staff in sports institutions—has been effectively addressed. Presentation and discussion of statistical semantics for the design of training programs:

Table 3. Statistical semantics of the design of training programs (N=120)

Phrases	Mean	Standard deviation	Percentage ratio	The level
Professors from the faculties of physical education	2.617	0.676	87.22	Elevated
Experts in the fields related to the management of sports institutions	2.533	0.755	84.44	Elevated
Human resources training department at the club	2.525	0.756	84.17	Elevated
An administrative body responsible for planning training programs for the management of sports activities	2.517	0.756	83.89	Elevated
Specialized training ma for the administrative development of sports activity in sports clubs	2.575	0.752	85.83	Elevated
Modern in the field of sports management and management of sports institutions	2.583	0.751	86.11	Elevated
The training content connects the presented training material and practical reality	2.525	0.756	84.17	Elevated
Training content enhances cognitive and managerial needs	1.900	0.492	63.33	Average
Lecture style	2.025	0.614	67.50	Average

Discussion style	2.542	0.787	84.72	Elevated
Seminars	2.583	0.729	86.11	Elevated
Conferences	2.600	0.703	86.67	Elevated
Workshops	2.608	0.690	86.94	Elevated
2.472	0.676	82.39	Elevated	

As presented in Table (3), the overall level of responses regarding the design of training programs is categorized as *high*, with a total percentage of 82.39%. Within this data, two statements were rated at a *medium* level, with percentages ranging from 63.33% to 67.5%, while eleven statements were classified as *high*, with values ranging between 83.89% and 87.22%.

This high rating may be explained by the fact that such programs play a vital role in enhancing the administrative efficiency of sports activity managers. The effectiveness of these programs is largely due to the involvement of experts in Human Resources Management, who are often internal to the organization and possess a deep understanding of employee performance. These experts are responsible not only for designing the training content but also for accurately analyzing the specific needs of administrators. In addition, administrative bodies tasked with training planning are expected to consider the diversity among trainees in order to maximize the benefits of the program (Chen et al., 2021).

These findings align with those of Mahmoud (2025), whose study emphasizes the significance of administrative training in the development of human resources within sports organizations. Mahmoud and colleagues highlight that one of the most crucial stages in the training process is identifying the methods that effectively support human resources development. The study also clarifies the concept of Human Resources Development (HRD) and explores how administrative training is intrinsically linked to HRD efforts, with the ultimate goal of improving the quality of services provided by sports clubs (Mahmoud et al., 2025).

In conclusion, these results provide a comprehensive answer to the third research question, which focuses on the design of training programs for managing sports activities within sports institutions.

Table 4. Statistical semantics of the implementation of the training program for the management of sports activity in sports institutions (N=120)

Phrases	Mean	standard deviation	Percentage ratio	The level
There are criteria for selecting trainees candidates to attend training programs	2.525	0.799	84.17	Elevated
There are criteria for selecting trainers who provide training programs	2.500	0.756	83.33	Elevated
The training material is well prepared and achieves the objectives of the training program	2.542	0.755	84.72	Elevated
Appropriate training methods are selected for the nature of the training program	2.558	0.765	85.28	Elevated
Distribution of training content is appropriate for the duration of the training program	2.575	0.752	85.83	Elevated
The timing of the implementation of training programs is appropriate that does not contradict the nature of the work	2.558	0.754	85.28	Elevated
2.543	0.751	84.77	Elevated	

As shown in Table (4), the overall assessment of statements related to the *implementation* of training programs for Sports Activity Management in sports clubs is rated as *high*, with an overall percentage of 84.77%. Notably, every item in this category received a high rating, with values ranging between 83.33% and 85.83%.

This consistently high rating may be attributed to the fact that administrative and training development programs are implemented based on clear criteria. These include the careful selection of qualified individuals—either coaches or professionals—who are eligible to attend specialized training sessions aimed at enhancing their creativity and innovation in administrative functions. Candidates are typically nominated by the club’s leadership, particularly those recognized for administrative excellence. Moreover, those responsible for delivering these training sessions must possess the competencies and professional attributes necessary to effectively guide and develop administrative personnel.

These findings are consistent with the study conducted by Amigó (2023), which emphasizes the importance of building a “second line” of administrative staff within sports clubs through structured vocational training. According to Amigó and Rosso (2023), such in-service training programs significantly contribute to the scientific and cultural advancement of sports activity managers, equipping them with the tools needed to excel in their roles and support long-term organizational development. In summary, these results effectively address the fourth research question concerning the implementation of training programs for the management of sports activities within sports institutions.

Discussion

The findings of this research reveal a consistently high evaluation of managerial training across various dimensions within sports institutions. As demonstrated in Table 1, the overall responses to the objectives of managerial training achieved a high rating of 84.61%. Notably, most statements were rated highly, suggesting that these training programs are effective in providing employees with essential skills and knowledge, especially in navigating scientific advancements and overcoming administrative challenges. The ability to foster creativity, leadership, and organizational efficiency further reinforces the critical role these training objectives play in elevating the institutional capacity of sports organizations. This aligns with the study by Melnyk et al. (2021), which emphasized the role of administrative training in establishing systematic structures and improving performance standards within sports federations.

Building upon this, Table 2 presents a similarly high overall score (83.36%) for the training needs of sports activity managers. The data indicate that the managers require strong administrative capabilities, particularly in record-keeping, legislative knowledge, strategic planning, and effective communication across various managerial levels. These findings support the notion that identifying and addressing specific training needs are essential in shaping competent sports administrators. They corroborate the results of Storm et al. (2021), who argued for adaptive training programs that evolve with scientific advancements and address the functional gaps in administrative roles, particularly in the field of sports education.

In connection with the identified needs, the design of training programs—as outlined in Table 3—also received a high overall rating of 82.39%. The strong performance in this area reflects the importance of tailoring training content to meet the real-world demands of sports management. Programs designed by human resources experts who are familiar with

the internal dynamics of the organization were seen as especially effective. These programs not only consider individual differences among trainees but also aim to enhance cognitive and managerial competencies. Mahmoud et al. (2025) similarly highlight the integral role of well-designed administrative training in supporting human resource development within sports institutions, reinforcing the findings of this study.

Finally, Table 4 underscores the effective implementation of these training programs, with an overall rating of 84.77%. All items received high scores, pointing to a consistent application of best practices in execution. Criteria for participant selection, training methods, and timing have all contributed to the successful delivery of these programs. This suggests a mature administrative framework that prioritizes strategic planning and operational excellence in training. These results resonate with the conclusions of Amigó and Rosso (2023), who emphasized structured vocational training as a means to build a competent second line of sports administrators capable of sustaining long-term institutional development.

In sum, the four main aspects addressed in this research—training objectives, needs assessment, program design, and implementation—collectively provide a robust framework for enhancing managerial capacity in sports institutions. These findings answer the core research questions and offer valuable insights for future efforts to optimize administrative training systems in the sports sector.

Conclusions

Based on the results of this study, it can be concluded that managerial training in sports institutions plays a crucial role in improving the efficiency and effectiveness of the organization. The achievement of the established goals within each organizational unit serves as the basis for evaluating the success of this training program. This training program has proven effective in driving organizational goal attainment by providing the necessary skills and knowledge to effectively carry out administrative tasks.

Furthermore, this training has been successful in developing leadership skills among participants and fostering a spirit of creativity. By enhancing leadership capabilities, the training has a positive impact on participants’ ability to devise innovative solutions in managing administration and overcoming challenges, particularly in the context of the ever-evolving field of sports management.

The study also highlights that one of the primary benefits of the training is the elimination of administrative obstacles often faced by administrators. Through a well-

structured training program, participants can acquire the skills to address administrative issues effectively, thereby improving operational efficiency within the organization.

Additionally, the enhancement of relevant administrative information has been a key aspect of this training program. By facilitating access to up-to-date data and information, training participants are better equipped to make more informed and accurate decisions. This not only improves the quality of management but also accelerates decision-making when addressing the challenges in the sports sector.

On the other hand, this training also teaches participants to adopt scientific methods in decision-making. The ability to analyze problems systematically and based on evidence is crucial in the context of sports administration, which often faces complex situations requiring measured solutions.

Lastly, improving communication skills across various administrative levels within the sports organization is another determining factor in the success of this training. Effective communication between different management tiers ensures better coordination and fosters more harmonious working relationships, which in turn enhances organizational productivity and efficiency.

Thus, this managerial training program makes a significant contribution to the development of administrative skills in sports institutions, ultimately supporting the achievement of organizational goals and the sustainable management of sports activities in an effective and innovative manner.

Recommendations

In light of the objective of the research and its results and guided by the conclusions, the researcher recommends the following:

- 1- The need for further research to validate and expand upon the current findings.
- 2- The need for longitudinal studies or replication with larger and more diverse samples would add value.
- 3- Conducting more studies and scientific research using various training curricula and programs to improve the skills of all activities in general.
- 4- Directing the results of this research to the sports college to benefit from these results.

References

Amigó, J. M., & Rosso, O. A. (2023). Ordinal methods: Concepts, applications, new developments, and challenges—In memory of Karsten Keller (1961–2022). *Chaos: An*

Interdisciplinary Journal of Nonlinear Science, 33(8).

Bai, Z., & Bai, X. (2021). Sports big data: management, analysis, applications, and challenges. *Complexity*, 2021(1), 6676297.

Banwan shareef, Q. (2020). Effect of Using Modified Training Equipment to Develop some Soccer Skills for Youth. *Indian Journal of Public Health Research & Development*. <https://doi.org/10.37506/ijphrd.v11i4.9143>

Bloomfield, J., Polman, R., O'Donoghue, P., & McNaughton, L. (2007). Effective speed and agility conditioning methodology for random intermittent dynamic type sports. *Journal of Strength and Conditioning Research*, 21(4), 1093–1100. <https://pubmed.ncbi.nlm.nih.gov/18076227/>

Chen, M., Lu, S., & Liu, Q. (2021). Uniqueness of weak solutions to a Keller–Segel–Navier–Stokes system. *Applied Mathematics Letters*, 121, 107417.

Kooli, C., & Abadli, R. (2022). Could Education Quality Audit Enhance Human Resources Management Processes of the Higher Education Institutions? *Vision: The Journal of Business Perspective*, 26(4), 482–490. <https://doi.org/10.1177/09722629211005599>

Mahmoud, A.-H. F. A. M., Hassan, M. A. J. A., & Abbas, R. A. A. (2025). The Analytical Study of the Media's Role in Creating Crises: Perspectives of Administrative Bodies in Sports Clubs. *Indonesian Journal of Physical Education and Sport Science*, 5(1), 78–92. <https://doi.org/10.52188/ijpess.v5i1.1061>

Melnyk, N., Maksymchuk, B., Gurevych, R., Kalenskyi, A., Dovbnya, S., Groshovenko, O., & Filonenko, L. (2021). The Establishment and Development of Professional Training for Preschool Teachers in Western European Countries. *Revista Romaneasca Pentru Educatie Multidimensionala*, 13(1), 208–233. <https://doi.org/10.18662/rrem/13.1/369>

Nuriddinov, A. (2023). Managing The Process Of Talent Development In Sports Anatasia. *American Journal Of Social Sciences And Humanity Research*, 3(11), 121–132.

Ramadhan, R., Effendy, F., & Putra Pratama, A. (2023). Sports Education on Student Learning Motivation Seen from the Roles Involved in Sport Education Using Handball. *Indonesian Journal of Physical Education and Sport Science*, 4(1), 22–30. <https://doi.org/10.52188/ijpess.v4i1.511>

Ramírez-Montoya, M. S., Andrade-Vargas, L., Rivera-Rogel, D., & Portuguese-Castro, M. (2021). Trends for the future of education programs for professional development. *Sustainability*, 13(13), 7244.

Sapozhenkova, E. V., Kolpakov, V. V., & Tomilova, E. A. (2024). Advanced Methodologies In The Establishment Of Physiological Norms And Their Significance In Evaluating Human Health. *Human Sport Medicine*, 24(2), 13–22. <https://doi.org/10.14529/hsm240202>

Schwiter, K., Nentwich, J., & Keller, M. (2021). Male privilege revisited: How men in

female-dominated occupations notice and actively reframe privilege. *Gender, Work & Organization*, 28(6), 2199–2215.

Storm, L. K., Henriksen, K., Stambulova, N. B., Cartigny, E., Ryba, T. V., De Brandt, K., Ramis, Y., & CeciĆ Erpić, S. (2021). Ten essential features of European dual career development environments: A multiple case study. *Psychology of Sport and Exercise*, 54, 101918. <https://doi.org/10.1016/j.psychsport.2021.101918>

Umamaheswari, D. D. (2024). Role of Artificial Intelligence in Marketing Strategies and Performance. *Migration Letters*, 21(S4), 1589–1599.

Vasileva, I. V., & Chumakov, M. V. (2024). University Students' Perceptions Regarding The "Physical Education" Training Course. *Human Sport Medicine*, 24(2), 118–124. <https://doi.org/10.14529/hsm240215>

Yang, N., Yang, C., Xing, C., Ye, D., Jia, J., Chen, D., Shen, X., Huang, Y., Zhang, L., & Zhu, B. (2022). Deep learning-based SCUC decision-making: An intelligent data-driven approach with self-learning capabilities. *IET Generation, Transmission & Distribution*, 16(4), 629–640.