Bravo's: Journal of Physical Education and Sport Science
Volume 13 Issue 2, Mei 2025, pp: 408-417
E-ISSN: 2597-677X; P-ISSN: 2337-7674
DOI: http://dx.doi.org/10.32682/bravos.v13si2/149

Competency model of sports coaches in multi-discipline coaching science

Masayu Rizka Risjanna[1], Novrizal Achmad Novan[2], Syifa F. Syihab[3], Dery Rimasa[4]

[1]*Study Program of Sport Physical Coaching, Faculty of Sport and Health Education, Universitas Pendidikan Indonesia*
[2]*Study Program of Sport Physical Coaching, Faculty of Sport and Health Education, Universitas Pendidikan Indonesia*
[3]*Study Program of Nutrition, Faculty of Sport and Health Education, Universitas Pendidikan Indonesia*
[4]*Study Program of Sport Physical Coaching, Faculty of Sport and Health Education, Universitas Pendidikan Indonesia*
**Corresponding author:* masayurizka@upi.edu

Abstract

To achieve high performance in sports requires integrated and continuous preparation between several factors in the training process that must be implemented to achieve an increase in the athlete's abilities. One factor in achieving maximum performance for an athlete is that the quality of the coach plays an important role in helping an athlete. The method used was an experiment by providing treatment to sports coaches in Manggar District. East Belitung, totaling 18 people as research subjects. Furthermore, the constituent variables include: physical training knowledge test, psychological knowledge test, injury management knowledge test and nutritional coverage test: practice of identifying daily food and drink consumption. Data analysis uses the ANOVA data regression model test to determine predictions by carrying out variance analysis and using factor analysis (Exploratory Factor Analysis) to analyze which variables have the dominant value in the trainer's competence.

Keywords: *Coach Competency, Multi-Discipline, Coaching Science*

Received: 03-05-2025 Revised: 07-05-2025 Accepted: 13-05-2025

Authors' Contribution: A – Conceptualization; B – Methodology; C – Software; D – Validation; E - Formal analysis; F – Investigation; G – Resources; H - Data Curation; I - Writing - Original Draft; J - Writing - Review & Editing; K – Visualization; L – Supervision; M - Project administration; N - Funding acquisition

INTRODUCTION

To achieve high achievement in sports, integrated and continuous preparation is needed between several factors in the training process that must be carried out to achieve increased athlete abilities. These factors are training that includes physical, technical, tactical, and psychological (mental) formation (Bompa, 2009). Although training factors are closely related, each training has a way of developing it. This has an impact on competitive competition in all fields, including the field of sports training (Emral & Yudi Alex Aldha, 2021). One of the factors in achieving maximum achievement for an athlete is the quality of the coach who has an important role in helping an athlete. Increasing achievement in the world of sports is not only limited to the ability of a coach who has previous experience as an athlete, but coaches must develop themselves to improve the quality of their abilities such as taking coaching or licensing training to gain new knowledge that can be implemented to the athletes they train

(Martindale & Nash, 2013). The same opinion was expressed by Park et al., (2021) explaining that as a coach, you must have in-depth knowledge of coaching activities, from basic skills to complex tactics and strategies.

To support his profession as a coach, preparation and coaching certificates are needed (Purnamasari, 2011). Philips (2007, p. 25) stated several parts contained in coach competency, namely character development competency, match strategy competency, motivation competency, and technical competency. This is also stated in Permen PANRB no. 4 of 2021 which states that the competency standards for functional sports coach positions include managerial competency, socio-cultural competency, and technical competency. Therefore, a coach competency model is needed to equip coaches with good quality and be responsible for their duties as coaches. A sports coach has responsibilities such as planning, organizing, and delivering activities and training programs that are appropriate for individuals and teams (Bean et al, 2020). This responsibility connects the discipline of sports coaching closely with the instruction, guidance, and motivation of athletes, both professional and amateur, in the basics of each sport (Ronkainen et al., 2022). In addition, coaches are also required to continue their education to increase their knowledge, create new training methods, and communicate this information to athletes to compete with their competitors.

Some fields of study related to coaching include sports medicine, sports physiology, sports biomechanics, sports psychology, sports nutrition and anthropometry, and sports coaching science (Vedova, 2022). The study of sciences including physiology, biomechanics, psychology, testing and measurement, sports health, motion learning, nutrition, history, and sociology are sub-disciplines to support training theories and methodologies that can be applied in the training process (Hermawan et al., 2020). By applying sports science, coaches can improve athlete performance by using data analysis effectively. Therefore, sports coaches need to equip themselves with knowledge of sports coaching disciplines.

To become a sports coach in Indonesia, one of the priority programs of the Ministry of Youth and Sports is to improve the certification of sports coaches with a bachelor's degree in sports education (https://tinyurl.com/2hjqve5z). However, currently, the number of coaches who have a bachelor's degree in sports education is only 21%, whereas the minimum requirement is 30% (https://tinyurl.com/2gfotnqt). From the data results during the 20th National Sports Week (PON) in Papua in 2021, Bangka Belitung province was ranked 31st out of a total of 34 provinces involved and only managed to win 11 medals. The results obtained

during the 20th National Sports Week (PON) will be used as an evaluation of the development of sports in Bangka Belitung Province. However, in the process, there are budget limitations in coaching athletes and the achievements of sports athletes in Bangka Belitung Province. To achieve optimal performance, other strategies related to the implementation of the coaching and training process need to be a priority strategy. Coaching that has poor standards is one of the factors that causes low levels of sports achievement (Salcinovic et al., 2022).

Based on the analysis of the situation that has been explained above, it can be said that the interaction between factors that contribute to success with the knowledge and abilities that the coach has determined the level of athlete success. In addition, the coach must have beliefs and perspectives that help his athletes to develop. In addition, the need for a competency model through multidisciplinary coaching science can provide a guideline that helps someone understand the best way to achieve success in work or understand how to overcome a particular situation (LOMA Competency Dictionary, 1998), which can be a benchmark for job requirements as a coach that allows him to do his job successfully.

METHOD

The method used is an experiment by providing treatment to 18 sports coaches in Manggar, East Belitung Regency as research subjects, then continued with the implementation of an assessment with an authentic assessment in terms of knowledge, attitudes, and skills. The process goes through 3 stages, namely the preparation, implementation, and follow-up stages. Furthermore, the constituent variables include:

- Physical training knowledge test
- Psychology knowledge test
- Injury handling knowledge test
- Nutritional adequacy test: the practice of identifying daily food and drink consumption.

RESULTS

1. Table 1. Data Description

	Mean	**Standard Deviation**
Nutrition	50.00	9.718

	Mean	**Standard Deviation**
Physical	50.00	9.718
Rehabilitation	50.00	9.718
Psychology	50.00	9.718
Total	50.00	48.726

Table 1 above shows the average (mean) results of each variable of 50.00 and the standard deviation of the variables of physical condition, psychology, nutrition, and injury management of 9.718 with a total standard deviation of 48.726. The variables used in this study are physical condition, psychology, nutritional knowledge, injury management (rehabilitation), and trainer understanding competence. The next step is to determine the correlation of each variable. In the correlation analysis carried out in this study, a value will be obtained which is called the correlation coefficient. The correlation coefficient can be positive or negative, with the correlation coefficient value ranging from -1 to +1. A positive correlation is indicated by a positive correlation coefficient, and vice versa, a negative correlation is indicated by a negative correlation coefficient, and so on.

Table 2. Correlation Coefficient

	Unstandardized coefficients	**Standardized coefficients**	**P value**	**5.0 %**	**95.0 %**
Nutrition	0.258	0.258	0.000	0.258	0.258
Physical	0.388	0.388	0.000	0.388	0.388
Rehabilitation	0.267	0.267	0.000	0.267	0.267
Psychology	0.381	0.381	0.000	0.381	0.381
Intercept	-14.711	0.000	0.000	-14.711	-14.711

It can be seen in Table 2 above, showing that the p-value of each variable of physical condition, psychology, nutritional knowledge, and injury management is 0.00 <0.05. So it can be concluded that the variables of physical condition, psychology, nutritional knowledge, and

injury management have a relationship with coach competence. Furthermore, as seen in Table 2 below, the level of closeness of the relationship between the physical condition variable is 0.388, which means it has a positive correlation level. Then in the psychology variable, a value of 0.381 is obtained, which has a positive correlation. Furthermore, the nutritional knowledge variable has a value of 0.258, which means it has a positive correlation, and in the injury management variable, a value of 0.267 is obtained, which means it has a positive correlation.

Table 3. Correlation Level and Correlation Strength

No	Coefficient Score (r)	Correlation Level
1	0.00-0.199	Very Weak
2	0.20-0.399	Weak
3	0.40-0.599	Enough
4	0.60-0.799	Strong
5	0.80-0.1000	Very Strong

The results of the Correlation Coefficient Test in the previous Table 2. show the four independent variables, namely the physical condition of 0.388, the psychology variable obtained a value of 0.381, the nutritional knowledge variable obtained a value of 0.258, the injury handling variable obtained a value of 0.267. So in Table 3. it can be concluded that there is a weak correlation between the four independent variables with the understanding/competence of the trainer. Furthermore, a regression model data test was carried out to determine the prediction by conducting a variance analysis using the ANOVA test which can be seen in Table 4.

Table 4. ANOVA Testing

	Sum square	df	Mean square	F	P value
Total	1.700.000	17	0.000	0.000	0.000
Error	0.000	13	0.000	0.000	0.000

Regression	1.700.000	4	425.000	28.010.005.722.520.000.000.000	0.000

Based on the data in Table 4 above, the F value is 28.010 with a p-value or significance level of 0.00 <0.05. So this regression model can be used to predict coach competence. In other words, physical condition, psychology, nutritional knowledge, and injury management together affect coach competence. The next stage is to analyze which variables have dominant values in coach competence. Data were analyzed using factor analysis (Exploratory Factor Analysis). Figure 1 is the result of the analysis using Smart PLS 4.0.

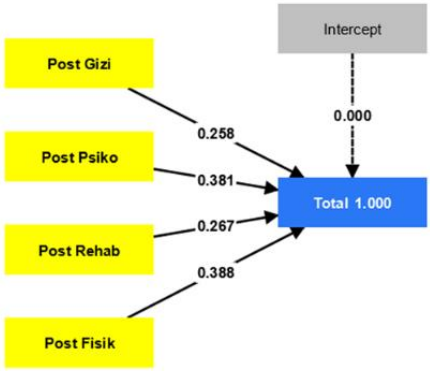

Figure 1. Factor Analysis

Based on Figure 1, it shows that the physical condition variable has the highest value, namely 0.388, then psychology with a value of 0.381, injury management (rehabilitation) 0.267 and finally understanding of nutrition at 0.258.

RESULTS AND DISCUSSION

Based on research to increase muscle strength, a volume of 2–10 RM in 1–3 sets, with a density or frequency of 2–4 times a week provides better results. The training dosage to increase muscle strength so that it works well is with high intensity (70–100%) accompanied by low volume training (6–10 repetitions & 3–5 sets) and frequency (2–3 times a week) (Nala , 2011). In this case, it is very appropriate for 20 repetitions of badminton footwork training to increase muscle ability as well as muscle endurance and involve the aerobic energy system,

namely VO2Max. Footwork training is 20 repetitions, with high training volume 3 times a week, with low intensity and high volume (reps & sets), the resulting increase in muscle endurance (Nala, 2011).

Theoretically, the results of this research can be explained that training is a physical movement or mental activity that is carried out systematically and repeatedly over a long period of time with a progressively increasing load which aims to improve the body's physiological and psychological functioning system at that time. carry out sports activities in order to achieve maximum results (Kanca, 2004). Sports training with an aerobic energy system is a form of physical training that provides stress to the body organs being trained. This loading will provide an opportunity to increase the ability of the cardiorespiratory system to distribute oxygen to all body tissues.

Training for all competitions from strides, sprints, middle distances to long distances requires increased anaerobic and aerobic endurance. In badminton footwork training, 20 repetitions predominantly use the aerobic energy system, where aerobic endurance is controlled by the capacity of the heart, lungs and respiratory system to provide oxygen to the muscles. The badminton footwork training method is 20 repetitions by providing a gradual and progressive increase in load, either from sets or repetitions of each exercise per week. As a form of training using an aerobic energy system, this method has a positive influence on increasing VO2Max which is the dominant factor in showing a person's body abilities and VO2Max ability will provide an overview of the magnitude of motor ability (motoric power) in a person's aerobic process (Astrawan, 2013).

Physical activity, especially aerobic exercise, can increase VO2Max because this exercise directly involves the cardiovascular and respiratory systems. Aerobic exercise such as running, cycling and swimming increases heart rate and breathing, which in turn strengthens the heart muscle and increases the capacity of the lungs to deliver oxygen to the body's muscles. Through consistent exercise, the body will be more efficient at taking in, transporting and using oxygen, all of which contribute to increasing VO2Max (Darmawan and Jatmiko, 2020).

According to Wiarto in 2013, physical exercise can provide changes to all body system functions. Changes that occur during training are called responses. Meanwhile, changes that occur as a result of continuous and programmed training in accordance with training principles are called adaptation. The fast heart rate during exercise is a response from the heart, but after a long period of training the heart rate slowly becomes stable because the strength of the heart

muscle increases to pump blood, this is the heart's adaptation to the physical exercise undertaken. The heavier the physical activity carried out when exercising, the greater the need for oxygen in the body. To compensate for this, the heart and circulatory system have to work more to meet the oxygen needs of the body's tissues.

Aerobic exercise also increases the metabolic efficiency of muscle cells by increasing the number and function of mitochondria, the organelles responsible for energy production. In addition, aerobic exercise increases blood volume and the amount of hemoglobin, the protein that carries oxygen in the blood, so that more oxygen can be transported to working muscles. All these physiological adaptations increase the body's capacity to work at high intensity for longer periods, which is reflected in increased VO2Max values.

CONCLUSIONS

The conclusion of the community service that has been carried out is that there is a positive relationship or correlation between the four independent variables, namely physical condition, psychology, knowledge of nutrition, and injury management with the competence of sports coaches in Manggar, East Belitung Regency. The closeness of the correlation of the four independent variables is stated to have a weak correlation level. Together, the variables of physical condition, psychology, knowledge of nutrition, and injury management affect the competence of coaches. Developing sports training programs, training to improve physical performance, teaching technical and tactical skills, monitoring and improving the performance of athletes they train, identifying the strengths and weaknesses of opponents, and providing advice on health, nutrition, and lifestyle, coaches also need to provide advice on injury care, physical condition management, and other tasks that must be done as a coach. The correlation of competence possessed by a sports coach who can utilize multidisciplinary coaching science and can apply it to athletes will help athletes, especially in Manggar, East Belitung Regency to have good achievements..

REFERENCES

Bompa Tudor O. & G. Gregory Haff. (2009). Periodization Theory and Methodology of Training. Australia: Human Kinetics.Harsono. 1988. Coaching dan Aspek-Aspek Psikologi Dalam Coaching. Jakarta: C.V. Tambak Kusuma.Bhaktavatsalam, A. K., & Choudhury, R. (1995). Specific Energy Consumption in The Steel Industry. Energy, 20(12), 1247–1250.

Effendi, H. (2016). Peranan Psikologi Olahraga dalam Meningkatkan Prestasi Atlet. Nusantara (Jurnal Ilmu Pengetahuan Sosial), 1, 22–30.

Emral, & Yudi Alex Aldha. (2021). Pelatihan Coaching Clinic Festival FIFA Grassroots Pelatih Sepakbola Se-Kabupaten 50 Kota. Journal Berkarya Pengabdian Kepada Masyarakat, 3(1), 1–5. http://jba.ppj.unp.ac.id/index.php/jba/article/view/75

Firmansyah, H., & Indonesia, U. P. (2017). Hubungan Antara Aspek Fisik Dan Psikologis. 14(1), 78–89.

Fitness Physical. (2013). "Physical Fitness Constructs, Measures, and Outcomes." Physical Fitness and Resilience5–16.

Fullagar, H. H. K., McCall, A., Impellizzeri, F. M., Favero, T., & Coutts, A. J. (2019). The Translation of Sport Science Research to the Field: A Current Opinion and Overview on the Perceptions of Practitioners, Researchers and Coaches. Sports Medicine, 49(12), 1817–1824. https://doi.org/10.1007/s40279-019-01139-0.

Gabbard, C. (2003). Non-elite level gymnasts non-elite level gymnasts major subject : Physical Education. December.

Ghozali, Imam. 2011. "Aplikasi Analisis Multivariate Dengan Program SPSS". Semarang: Badan Penerbit Universitas Diponegoro

Gunarsa, Singgih D. 2004. Psikologi Praktis Anak, Remaja dan Keluarga, Cetakan. 7. Jakarta : PT. Gunung Mulia

Hidayat, Y. (2010). Psikologi olahraga. Bandung: CV. Bintang Warli Artika.

Hermawan, I., Maslikah, U., Masyhur, M., & Jariono, G. (2020). Pelatihan Kondisi Fisik Pelatih Cabang Olahraga Kota Depok Jawa Barat Dalam Menghadapi Persiapan PORPROV 2022. Prosiding Seminar Nasional Pengabdian Kepada Masyarakat 2020 (SNPPM-2020), 1(1), 371–380. http://journal.unj.ac.id/unj/index.php/snppm

Ilham, Z. (2021). Peranan Psikologi Olahraga Terhadap Atlet. Prosiding Seminar Nasonal Pendidikan Kepelatihan Olahraga, 1(2), 274–282.

Irwanto, & Romas, M. Z. (2019). Profil Peran Psikologi Olahraga Dalam Meningkatkan Prestasi Atlet di Serang-Banten Menuju Jawara. Prosiding Seminar Nasional IPTEK Olahraga, 2(1), 1–14.https://ejournal.unibabwi.ac.id/index.php/semnassenalog/article/view/610

Jariono, G., Subekti, N., (2020). Sports Motivation Survey And Physical Activity Students Of Sport Education Teacher Training And Education Faculty FKIP Muhammadiyah. Kinestetik : Jurnal Ilmiah Pendidikan Jasmani 4(2).

Martindale, R., & Nash, C. (2013). Sport science relevance and application: Perceptions of UK coaches. Journal of Sports Sciences, 31(8), 807–819. https://doi.org/10.1080/02640414.2012.754924

Mason, B., McKune, A., Pumpa, K., & Ball, N. (2020). The Use of Acute Exercise Interventions as Game Day Priming Strategies to Improve Physical Performance and Athlete Readiness in Team-Sport Athletes: A Systematic Review. Sports Medicine, 50(11), 1943–1962. https://doi.org/10.1007/s40279-020-01329-1

Mulyawati, Ali Umar, Suwirman, A. A. (2020). Tinjauan VO2Max Karate-Ka Dojo Forki Kota Sungai Penuh. Jurnal Pendidikan Dan Olahraga. http://jpdo.ppj.unp.ac.id/index.php/jpdo/article/view/425/199

Nideffer, R M. (2010). Psychology of Performance. Focus area A - Learning physical kills. 41-73. http://lib.oup.com.au.s3.amazonaws.com/secondary/health/PESenior-Physical-Education-for-QLD/chapter-2.pdf

Pratama, S. M., & Wiyaka, I. (2021). Profil Kondisi Fisik, Teknik, Dan Psikis Atlet Sepak Takraw. Jurnal Olahraga Dan Kesehatan Indonesia, 1(2), 109–115. https://doi.org/10.55081/joki.v1i2.307

Park, S., McLean, G. N., & Yang, B. (2021). Impact of managerial coaching skills on employee commitment: the role of personal learning. European Journal of Training and Development, 45(8–9), 814–831. https://doi.org/10.1108/EJTD-07-2020-0122

Philips, Michael B. (2007). Student Athlete Perceptions of Head Men's Basketball Coaching Competencies at 15 Selected NCAA Division II Christian Colleges. Murfreesboro: Faculty of Graduate School at Middle Tennesse State University.

Ronkainen, N. J., Ryba, T. V., McDougall, M., Tod, D., & Tikkanen, O. (2022). Hobby, career or vocation? Meanings in sports coaching and their implications for recruitment and retention of coaches. Managing Sport and Leisure, 27(4), 381–396. https://doi.org/10.1080/23750472.2020.1803108

Sidik, D. Z. (2019). Pelatihan Kondisi Fisik. PT : Remaja Rosdakarya ISBN: 978- 602-446-343-4

Sidik, D.Z., Imanudin. I., dan Mujiyanto, S. (2010). "Dampak Pelatihan Harness Terhadap Peningkatan Kemampuan Dinamis Anaerobik dan Aerobik". 1-22.Subarkah, A. (2020). Pelatihan Kondisi Fisik Untuk Meningkatkan Bogor Jawa Barat. 2020, 75–81.

Sukadiyanto. (2011). Pengantar Teori dan Metodologi Melatih Fisik. Bandung: Lubuk Agung. Sutrisno Hadi.

Stavrou, N,A. (2013.). www.canoeHellas.gr. 3, 35–39.

Tangkudung, J. A.M. (2017). Mental Training. Aspek-Aspek Psikologi Dalam Olahraga. Cakrawala Cendekia 2017. Cetakan 1, September 2017. ISBN 978-602-50403-4-4. Bekasi.

Vedova, D. (2022). Sport Sciences: An Ideal Field of Play for Integrated Knowledges. In: Rezaei, N. (eds) Transdisciplinarity. Integrated Science, vol 5. Springer, Cham. https://doi.org/10.1007/978-3-030-94651-7_25.

Wahyuno, D. (2014). Studi Kondisi Fisik Atlet Sepakbola Persatuan Sepakbola Fakultas Keguruan dan Ilmu Pendidikan Universitas Bengkulu. Universitas Bengkulu.

West, S. W., Clubb, J., Torres-Ronda, L., Howells, D., Leng, E., Vescovi, J. D., Carmody, S., Posthumus, M., Dalen-Lorentsen, T., & Windt, J. (2021). More than a Metric: How Training Load is Used in Elite Sport for Athlete Management. International Journal of Sports Medicine, 42(4), 300–306. https://doi.org/10.1055/a-1268-8791