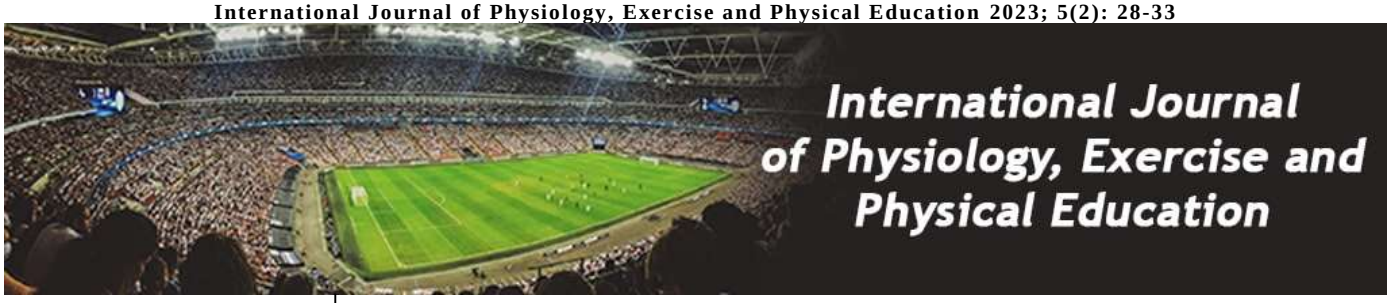

ISSN Print: 2664-7249
ISSN Online: 2664-7257
IJPEPE 2023; 5(2): 28-33
www.physicaleducationjournals.com
Received: 05-06-2023
Accepted: 10-07-2023

Dr. Afrah Abad Alqader Abbas
Lecturer, Department of Physical Education and Sports Sciences, College of Education for Women, Al-Qadisiyah University, Iraq

Dr. Yas Majeed Dahash
Assistant Professor, Department of Physical Education and Sports Sciences, College of Education for Women, Al-Qadisiyah University, Iraq

Corresponding Author:
Dr. Afrah Abad Alqader Abbas
Lecturer, Department of Physical Education and Sports Sciences, College of Education for Women, Al-Qadisiyah University, Iraq

Building and codifying a psychological engineering scale for young archery players in Baghdad clubs

Dr. Afrah Abad Alqader Abbas and Dr. Yas Majeed Dahash

DOI: https://doi.org/10.33545/26647249.2023.v5.i2a.66

Abstract
Sports psychology is a broad world as long as it is concerned with studying the psychological variables of athletes and studying their behavior to reach the highest levels and achieve the best achievements among athletes. Good physical and psychological preparation fulfills the ambitions of players and coaches alike. In this study, the researcher wanted to shed light on psychological engineering among modern psychological topics in the field. Sports, especially young archery players, Baghdad clubs, the research aimed to build a measure of psychological programming within the codification of the requirements of this measure for archery players. The aim of the study was to build and codify a measure of psychological engineering for archery players from among the sample members for this event of young people, numbering (20) players out of a total of (30) players representing the community of origin. The research hypothesized that there is a relationship between the scores on the scale tests for the sample members and also the level of standard scores among the sample members, the researchers reached the conclusions of the scale that was built among the sample members in the psychological engineering of the archery players from the sample members, and the levels were also distributed to varying degrees among the psychological engineering scale, as the researcher recommended taking advantage of the scale in the results of the research by guiding specialists and trainers because of its importance in tournaments and performance of training tasks for sample members of archery players.

Keywords: Psychological engineering scale, archery

1. Introduction
What has been achieved is excellence in all fields, especially the sports field in all sporting events, as psychology in these games plays a major role in the results, so those concerned with sports psychology have undertaken it upon themselves to study the variables in the field of sports psychology, and among these variables is psychological engineering or... What is known as psychological engineering, which means "the role of psychological engineering is evident in it, which helps a person to change through reforming his thinking, refining himself, programming his ambitions, and getting rid of the fears and bad concepts that exist and are stored in the power of the subconscious mind through his negative thoughts about himself (Al-Fiqhi, Ibrahim, (2008. p. 23) [1], Hence, psychological engineering is one of the modern topics, and the mind has its own ways of sorting information, which differs greatly from one person to another, which may easily lead us to a state of confusion or misunderstanding (Al-Tikriti, Wadih Yassin & Hassan, Muhammad, 1999, p. 21) [2], the applications of engineering extend to many aspects, including skills, training, education, and others. Archery players differ according to the rules of the archery game, which differ from other games in terms of accuracy in aiming at targets. As well as the exercises and situations that archery players are exposed to in this type, which requires the archer to program his thoughts positively to reduce the negativity that he may encounter during the competition, as the archery player competes with himself and overcomes his previous numbers before competing with the players. Engineering in a positive way makes. The archer thinks about achieving achievement, obtaining advanced ranks, and winning titles in the game he plays. Among these aspects and psychological factors, the importance of the study came in identifying the level of psychological engineering for young archery players through building and codifying a measure of psychological programming for young archery from Baghdad clubs.

1.1 Research Problem

The sport of archery is unique, as it is one of the individual and number-breaking sports events and games. Effectively, psychological aspects have an important and effective role in determining the ability to perform as a process that goes hand in hand with the rest of the training aspects of mentality and mental processes. Among these psychological variables is psychological engineering and how the programs himself positively and gets rid of negativity in performance, whether from the aspect of thinking, feeling, or actual design, thus reaching a state of very psychological stability for good technical performance, which will inevitably be reflected in the performance during competitions and various training situations in matches.

Through the researchers' experience in the field of sports psychology and their review of many club training, they noticed that there is a lack of standards that measure psychological variables among archery players, as they are a specialized activity. Through their access to scientific sources, research, and references, they were not able to obtain a measure of psychological programming in the field of archery. Therefore, the researchers decided to build and codify a scale for archer psychological programming to measure and know the level of psychological engineering among youth archers.

1.2 Research objective

1. Building and codifying a measure of psychological engineering among archery players.
2. Identifying the level of psychological engineering in light of the construction of the scale among archery players among the sample members.

1.3 Research hypotheses

1. There is a significant relationship for the standard scores and the rate of development of the sample's archers.
2. There is a significant relationship between the tests and the level of the standard scores in the arithmetic mean and the standard deviations for the sample members.

1.4 Research Field

1.4.1 Human Field: Twenty young archery players.

1.4.2 Time Field: For the period from 1/3/2023 to 27/5/2023.

1.4.3 Spatial Field: Archery playgrounds, Al-Zawraa parks, Baghdad governorate.

2. Research methodology and field procedures

2.1 Research methodology

The researchers used the descriptive approach using standard grading methods to build and codify the psychological engineering scale. The appropriate approach is one of the most important steps that results in the success of the research, "as the approach depends on the nature of the problem and the goal to be achieved". (Mahjoub, Wajih, 1985, p. 301) [3].

2.2 Research community and sample

The sample was determined intentionally from young Baghdad club archers, numbering (20) players out of (30) archers from the research community, with a percentage of (75%), and as shown in Table No. (1)

Table 1: Shows the distribution of individuals in the research samples and their percentage of the original population

1. Sample construction and regulation		2. Exploratory sample		Total
N	Percentage	N	Percentage	
20	75%	5	16,66%	30

2.3 Field procedures for research

2.3.1 Determine the scale of psychological engineering

Due to the nature of the problem and the method of solving it, the researchers were obligated to enumerate, prepare and define the variables for the study, as the study variable was determined by reviewing the literature, scientific sources and previous studies.

2.3.2 Building a psychological engineering scale

After reviewing and collecting information from scientific sources, analyzing and interpreting it, and through personal interviews with experts and specialists in the fields of sports psychology, measurement and evaluation, where they acknowledged the lack of a scale, so the researcher decided to build a scale that fulfills the study's requirement in measuring psychological engineering among archery players of Baghdad Clubs. From young people.

The goal of the scale is to measure the level of psychological engineering among young archery players in Baghdad clubs and to use it by clubs, coaches, specialists, and researchers as one of the indicators to measure the psychological engineering of archery players in such an event and the psychological variables that characterize it in the training units.

2.3.3 Determine the dimensions of the scale

After the researchers developed the dimensions of the scale, she presented it with an opinion poll questionnaire that she had prepared for this purpose to a group of experts and specialists in the field of sports and general psychology, tests and measurement, with the aim of starting to prepare the items. The researchers took into account the acceptable percentages of agreement on its validity and implicit representation of the scale, which reached the values for each dimension as shown in Table (2).

Table 2: Agreement of experts and specialists on the dimensions of the scale

Scale	N	Candidate dimensions	Experts Number	Agree	Disagree	Agreement Percentage
Psychological engineering	1	Psychological flexibility	15	15	0	%100
	2	Creativity		12	3	%80
	3	Mental training		13	3	%85
	4	Determination to succeed		14	1	%95

From Table (2), it is clear that five dimensions were accepted, which obtained agreement rates of more than (75%), as Benjamin mentions from Bloom that (75%) is appropriate for choosing the required variable.

One of the nominated dimensions was deleted because it did not obtain the acceptable percentage of agreement between experts and specialists, so that the scale consisted of (4) dimensions.

Establish the initial version of the scale

The paragraphs developed must be representative of the dimensions and scale under research, in addition to their connection to the goal of the study. The scientific method was followed in drafting them in the initial form, so the researcher prepared (50) paragraphs, distributed over (4) dimensions, with the instructions of the scale to be the initial form. Psychological engineering scale.

Determining the validity of the scale's items, instructions, alternatives, and correction key

The researchers relied on polling the opinions of experts and specialists through an opinion poll questionnaire to find out their opinions about the validity of the items, the type and number of their alternatives, their weights, and their affiliation to the dimensions of the scale, as well as the instructions prepared for the scale as a whole. Thus, the items that did not obtain the acceptable percentage were deleted, and modifications were made to some of them after they Experts and specialists expressed their responses to each item of the scale and the results of the final analysis showed acceptance (40).

2.4 The Exploratory experiment of the scale

The researchers applied the scale for the period from 1/4/2023 to a survey sample consisting of (4) players from Baghdad clubs with archery, who were chosen randomly. It became clear from this experiment that the scale's instructions and paragraphs were clear to all members of the sample, and thus the scale became (40) with its instructions and paragraphs. Ready to apply to the building sample.

2.5 The main experiment to build a psychological engineering scale

The main experiment was carried out by applying the scale to a sample of the structure with the aim of conducting a statistical analysis of its items in order to select valid items and exclude invalid items based on their discriminatory power. The scale was applied to a sample of (20) players, represented by archery players in Baghdad clubs, by the researcher personally.

Correction of the scale

In order to extract the total score for the scale, the scores obtained by the archer are summed over the 40 items of the scale, so the highest score that can be obtained is (200) and the lowest score is (40).

Statistical analysis of psychological engineering sections

First: the method of the two peripheral groups

To detect the discriminatory power of the items of the Psychological Engineering Scale, the two-tailed group method was used. For the purpose of calculating the discriminating power of the item, the scores were divided into an upper group and a lower group of scores, one of which was for archery players. This method relies on dividing the test items into two halves, the first containing the odd-numbered items. The other contains paragraphs with even numbers, and thus this method covers equivalent scores for the two halves of the paragraphs) (Abbas, Faisal, 1999, p. 123) [4] who obtained the highest scores. The second represents the archery players who obtained the lowest scores, and each group represents a percentage of (27%). Thus, the researcher formed two groups, upper and lower, each. To calculate the discrimination power of the paragraph, the law (T) was used for uncorrelated samples with a degree of freedom (54), and after applying statistical processes to extract the discriminatory power of the psychological engineering scale items appeared

Second: Internal consistency coefficient

Then, the researcher used the internal consistency coefficient in analyzing the scale items by using the simple correlation law (Pearson), and after completing the statistical analysis of the psychological engineering scale, all the scale items were approved due to the presence of significant correlations when compared with the tabular value of (0.19) and with a degree of freedom (19) below the significance level (0.05) and Appendix (1) shows the final scale.

Psychometric properties of the scale

Validity of the scale

However, it is the accuracy with which the test measures the purpose for which it was developed (Mustafa Mahmoud Al-Imam (and others). What is meant by accuracy is that the scale actually measures the characteristic for which it was developed, that is, how close the subject that the scale actually measures is to the subject for which it was designed.

First: Apparent Validity: This validity was achieved by presenting the current scale to experts and specialists in the field of physical education, sports sciences, and psychology to judge the validity of its positions since it measures what it was prepared for, and the agreement of (75%) or more of the experts and specialists is sufficient to determine this.

Second: Construct validity: The researchers verified the construct validity in measuring it through statistical analysis of the items, which showed that all items have the ability to distinguish between high-level and low-level players in measuring psychological engineering.

Scale reliability

First: Cronbach's alpha method

Since it may be used to any form of essay or objective inquiry, this approach was chosen (Al-Malihi, Helmy, 2000, p. 282) [6]. By utilizing the statistical tool (SPSS) to generate the scale and applying the Cronbach's alpha equation to the sample members, reliability was derived in this manner. It was discovered that the coefficient's value The Psychological Engineering Scale's reliability for all dimensions is (0.89), a strong reliability coefficient that may be used to calculate the test's dependability.

Objectivity of the scale

It will remain the same for the person who used this tool whether it was applied to an individual or group and then modified. (1988, p. 66, Abdel Rahman, Saad) [7] All of the claims were obvious to the sample once the test's data was deleted and repeated, and it is further distinguished by the fact that the options are multiple choice and not just the

solution does not contain an open response statement and accepts more than one choice. It is impossible to dispute with the grades that sample members received on the scale since it is thought to be quite objective.

Standard levels of the scale

To determine the levels, the researcher used the normal distribution curve (Gauss), which is one of the most common distributions in the field of physical education because many of the traits and characteristics that are measured in this field are distributed close to the normal curve. (6: 101) The researcher chose that there be (5) levels. For the psychological engineering scale for the youth archery players of Baghdad Clubs, and since the standard scores consist of (5) scores and the modified standard scores consist of (60) scores, one level consists of one standard score and is equal to (12) modified standard scores. As shown in Table (5).

Table 5: Levels and percentages for each level of the psychological engineering scale for young archery players from Baghdad clubs:

Standard levels	Raw Degree	Archery Number	Percentage
Very good	195 and above	8	10,78%
Good	170-190	3	30,39%
Middle	150-170	5	41,17%
Acceptable	95-65	5	11,79%

Psychological engineering scale in its final form

After the scientific foundations and parameters of the scale under study were conducted, the final version of the psychological engineering scale for young archery players in Baghdad clubs was made up of (4) dimensions divided into (40) items, and the (psychological flexibility) dimension consists of (15) items, as for what follows) Creativity) consists of (10) paragraphs, while after (mental training) consists of (10) paragraphs, while after (insistence on success) consists of (5) paragraphs, all of which are in positive directions and with (4) alternatives (which apply to me to a very large extent. They apply It applies to me to a great degree, it applies to me to a moderate degree, it applies to me to a weak degree, it does not apply to me at all) and with a correction key from (1-5) for the paragraphs, and a total score for the scale (200).

3. Presentation and analysis of psycho-engineering measurement results

3.1 Presentation and analysis of the results of the dimensions of the psychological engineering scale

From this, the researcher verified the results of the research, distributed naturally according to the (Gauss) curve in. In order to achieve the goal of the research, which is to identify the level of psychological engineering and reach more accurate, comprehensive and representative results, the researcher relied on the arithmetic mean, and this is done by calculating the length of the period first, which is the resultant (Divide 4/5), where (4) represents the number of spaces (from 1 to 2 is the first space, from 2 to 3 is the second space, from 3 to 4 is the third space, and from 4 to 5 is the fourth space), while the number (5) represents the number of choices, and when dividing (dividing 4/5) produces the length of the period and is equal to (0.80) (7:26).

3.1.1 Presentation and analysis of the results of the psychological engineering scale for dimensions and discussion

Table 5: The mean and standard deviation of the psychological engineering level of the dimensions compared to the hypothetical mean of the dimension:

Dimensions	Number of paragraphs	Measuring unit	N	Mean	Std. Deviation	Hypothetical mean
Psychological flexibility	15	Degree	20	44.36	3.96	26
Creativity	10		20	48.38	3.46	26
Mental training	10		20	45.65	2.82	22
Determination to succeed	5		20	42.11	3.07	22

4. Discussion

Table (5) shows that the number of psychological flexibility items is (15), while the arithmetic mean for the research sample was (34.21). In comparison with the hypothesized mean for the psychological flexibility dimension of (26), it was found that the sample exceeded the level of the hypothesized mean. That is, there is a significant difference in favor of the arithmetic mean, and this means that the young Baghdad club archers enjoy a level of psychological flexibility. The researchers attribute this to the accumulation of experience, especially since the players are from the youth team as a result of the large number of participants in local and foreign competitions, which increased their ability to prepare psychologically. The ability of archery players to control their emotions and to be patient and not to be provoked or aroused by the events that accompany training and competition in the sport of archery, and his commitment to calmness and sobriety, and his coach and colleagues trust him, increased the player's calmness and thus achieved high throwing accuracy (Abbas, Afrah Abdel Qader, 2013, p. 44) [8]. The researchers believe that participating in various competitions or in the training environment, in addition to having compatibility and familiarity with the rest of the other archery, is what made them flexible in dealing with the training environment as well as competitions. As for the creativity dimension, the number of items reached (14), while the arithmetic mean for the research sample was (48.38), and in comparison with the hypothesized mean for the outcome dimension of (42), it was found that the sample exceeded the level of the hypothesized mean.

That is, there is a significant difference in favor of the arithmetic mean. This means that the young Baghdad Clubs archery enjoy a level of outcome, and the researcher attributes this to the presence of a degree of responsibility among the Baghdad Clubs' young archery; The archery had emotional states about the goals they wanted to achieve in order to portray their sporting future according to prior decisions and steps, especially since the outcome is the final result that the archery wants to reach and the planned positive path. The number of arithmetic items for the research sample is (42.11), and in comparison with the hypothesized mean for the positive initiative dimension of

(39), it turns out that the sample exceeded the hypothesized mean level. The precise sense dimension reached (13) items, while the arithmetic mean for the research sample was (45.65). In comparison with the hypothesized mean for the precise sense dimension, which was (39), it was found that the sample exceeded the hypothesized mean level. That is, there is a significant difference in favor of the arithmetic mean, and this means that the young Baghdad club archers have a level of accurate sense. The researcher attributes this to the players having good psychological preparation that enabled them to raise their level of psychological stability through their observation and focus on the required goals, as well as the fact that the archery are young and as a result of the experiences they possess, as well as the nature of the sport they practice, being an individual game that requires precise observation, attention and focus. This is what motivated them to increase the level of creativity. The number of items after creativity (10 items) was the same as the mean, meaning that there is a significant difference and in favor of the arithmetic mean. This means that the young Baghdad club archers enjoy a level of mental training. The researcher attributes this to the research sample's possession of positive psychological programming. The researchers believe that the young Baghdad club archers enjoy a sound psychological balance because they practice mental training, which is part of their training units, to activate the brain in repeating successful experiences and isolating experiences in which there were some hesitations and mistakes in understanding problems, whether in the training conditions surrounding them or in the atmosphere. Competitions and they have a clear method of dealing with the requirements of competitions and training by focusing on the positives and having good self-esteem. Fatima Eid Malig and Afrah Abdel Qader mention that archery enjoy calmness and isolate themselves from the world during competition (Abdel Maleh, Fatima & Abdel Qader, Afrah, 2012, p. 66) [9], in order to be in greater psychological and mental balance. However, in the dimension of insistence on success, the number of items reached (10), while the arithmetic mean for the research sample was (38). In comparison with the hypothesized mean for the negative self-dimension of (36), it was found that the sample exceeded the hypothesized mean level, that is, there is a significant difference in favor of the arithmetic mean, and this means that young archery enjoy a level of negative self-esteem.

5. Conclusions and recommendations

5.1 Conclusions

1. The scale that was built is valid for measuring the dimensions of the psychological engineering of young archery players according to the standards that were developed for it.
2. The levels of psychological engineering among young archery players from Baghdad clubs were distributed into four levels, where the average level achieved the highest levels, followed by the good level, then the acceptable level, followed by the very good level, and finally the weak level.

5.2 Recommendations

1. The possibility of sports clubs benefiting from the results of the research, by directing specialists to work on developing psychological engineering processes among athletes who are archery because of their importance, by including training periods for athletes, and motivating them to be psychologically programmed in their sports performance and according to the performance of tasks. In the tournaments they play.
2. Thus, the psychological engineering scale is used in the current research by coaches before any competition to identify their effectiveness, motivations, and behavior during competition and achieve results in it.
3. The necessity of finding a relationship between psychological engineering and some training and psychological skills for other games.

References

1. Al-Fiqhi Ibrahim. Neuro-linguistic engineering and the art of unlimited communication, Ebdaa Media and Publishing, Cairo, Egypt; c2008.
2. Al-Tikriti, Wadih Yassin, Hassan Muhammad. Statistical applications and computer use in physical education research, Dar Al-Kutub and Publishing, Mosul; c1999.
3. Mahjoub Wajih. Scientific research methods and approaches, 1st edition: (Baghdad, Dar Al-Hekma; c1985.
4. Abbas Faisal. Psychological tests, their techniques and procedures, Beirut, Dar Al-Fikr Al-Arabi; c1999.
5. Mustafa Mahmoud Al-Imam (and others): Evaluation and Measurement, Baghdad, Dar Al-Hikma for Printing and Publishing, (B.T.), p. 102.
6. Al-Malihi Helmy. Contemporary Psychology, Dar Al-Nadou Al-Arabiya, Beirut, 8th edition; c2000.
7. Abdel Rahman Saad. Psychometrics Theory and Application, 3rd edition, Cairo, Dar Al-Fikr Al-Arabi; c1988.
8. Abbas Afrah Abdel Qader. Emotional arousal and its relationship to archery accuracy in archery sports, research published in the Journal of the College of Physical Education for Girls, University of Baghdad; c2013.
9. Abdel Maleh Fatima, Abdel Qader Afrah. Founded the practice of archery training. Year, 1st edition; c2012.

Appendix

Psychological engineering scale

N	Paragraphs	It applies to me perfectly	It applies to me a lot	Sometimes applies	Apply to me a little	Doesn't apply to me at all
1	Respect sports laws and principles					
2	I always cooperate with my colleagues					
3	Be serious about training					
4	Stick to exercise times					
5	I respect myself and others					
6	I don't like postponing work					
7	I help others when they need help					

8	Honest in my dealings with others					
9	I trust my abilities and the abilities of my colleagues					
10	I plan not the goals I want to achieve					
11	I believe that continuous and diligent work is the path to success					
12	Benefit from success experiences					
13	Enjoy success very much					
14	I believe that confidence is the path to success					
15	I have the ability to express what is inside me					
16	I try to always be creative in the arts of training in preparation for competition					
17	Always focus on the right time to do the right thing					
18	Sometimes I have to deal with people I don't get along with					
19	I think a lot about improving my athletic level					
20	I try to be flexible in my dealings with others					
21	I make my own goals and try to achieve them					
22	Post my new ideas					
23	I can achieve my best in important competitions					
24	Don't be confused by the strength of the competitor					
25	I forgive those who hurt me unintentionally					
26	He has a good prediction of the opposing player's movements					
27	I'm excited for match day and I'm full of enthusiasm and confidence					
28	I surprise my coach with creative moves he didn't expect					
29	I'm not afraid of failure					
30	It makes it easier for him to focus in difficult situations					
31	I admit my mistakes and try to correct them					
32	As the competition begins, his enthusiasm increases					
33	Adventure is one of the most beautiful moments I experience in competition					
34	I take firm and deliberate steps for my future plans					
35	Repeated attempts to achieve success do not discourage me					
36	I try to persevere and work hard to reach my goals					
37	Be realistic in estimating the extent of my potential					
38	I hope to become a well-known name among athletes in the future					
39	My performance improves as the difficulty increases					
40	I tend to innovate new methods in training					