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Research Paper

Psychological Stress and Its Relationship to the Performance of the 100-Meter Hurdles Event Among Female Physical Education and Sports Science Students

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ABSTRACT

This study aims to identify the relationship between psychological stress and 100-meter hurdles performance among female students in the Department of Physical Education and Sports Sciences at the College of Education for Girls at the University of Kufa, given the direct impact of psychological stress on physical and skill performance.

The researcher adopted a descriptive correlational approach, given its suitability for the nature of the study. The research population included 47 female students from the fourth year of the academic year (2023–2024), all of whom were selected to form the research sample.

The psychological stress scale prepared by Alawi (1998) was used, consisting of 30 items distributed across five dimensions. Technical performance in the 100-meter hurdles was also measured through the evaluation of three experts with the rank of professor in track and field.

The results showed a statistically significant inverse correlation between psychological stress and performance in the 100-meter hurdles, meaning that higher levels of psychological stress lead to lower levels of motor and temporal performance among female students.

The results also showed that female students with a higher ability to regulate emotions and manage stress exhibited more accurate and consistent performance, and that psychological balance contributed to improved neuromuscular coordination and motor speed.

The researcher concluded that psychological stress is a crucial factor in achieving athletic achievement. She recommended the integration of psychological preparation programs, mental relaxation techniques, and mental imagery into the training curricula of colleges of physical education and sports sciences. This would contribute to developing performance and improving results in fast-paced events such as the 100-meter hurdles.

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INTRODUCTION

Psychological pressure is one of the most significant factors influencing individual performance, particularly in sports, which requires a delicate balance between physical abilities and psychological skills. An athlete facing high-intensity competitive situations exposes herself to multiple psychological challenges, which can negatively impact her performance unless she possesses the ability to adapt and overcome these pressures. The 100m hurdles event is one of the most demanding athletics events, requiring focus, precision, and fluidity. It combines high motor skill with rapid response and emotional balance, making the psychological aspect a crucial factor in achieving optimal performance.

Recent studies have shown that psychological stress affects motor performance and the ability to make quick decisions during competition. High levels of stress lead to poor concentration and an increased likelihood of technical errors. Conversely, athletes who possess strong psychological resilience and effective strategies for coping with stress exhibit more stable and efficient performance.

From this perspective, the idea of this research was to investigate the relationship between the level of psychological stress and skill performance in the 100-meter hurdles event for female students, to identify the nature of this relationship and the extent of its impact on performance results, which would contribute to the development of training and psychological programs that focus on preparing female players comprehensively to ensure a balance between the physical and psychological aspects.¹

This research could contribute to enhancing scientific understanding of the role psychological stress plays in athletic performance and open new horizons for coaches and sports psychology specialists to develop effective psychological support strategies for female athletes, which would positively impact performance and achievement in future competitions.

Practical part

The research community included female students of the College of Education for Girls, Department of Physical Education and Sports Sciences, fourth year, numbering 47 students for the academic year (2023-2024). As for the research sample, it included all female students.

Pilot experiment sample

It consisted of (10) female students from the College of Education for Girls/Department of Physical Education and Sports Sciences, who were outside the sample.

Field research procedures

First: Measuring psychological stress

• Scale description and correction

The scale was prepared by Alawi (1998) and consists of 30 paragraphs distributed over 5 dimensions. The answer is given by choosing one of the five alternatives (very greatly - greatly - moderately - slightly - very slightly). The scale is corrected by giving (5) points when choosing the first alternative, (4) points

when choosing the second alternative, (3) points when choosing the third alternative, (2) points when choosing the fourth alternative, and (1) points when choosing the fifth alternative. In light of this, the maximum total score obtained by the examinee is (150) points, while the minimum is (30) points².

• Scientific basis of the scale:

Although the current scale has a high degree of validity and reliability through the scientific procedures conducted by (Ali, 1998) on the Saudi environment and within the Arab environment, as he extracted the reliability coefficient by the retest method, which reached (0.93), in addition to extracting the self-validity of the scale, which is measured by calculating the square root of the reliability coefficient, which reached (0.96), the researcher proceeded to conduct the validity and reliability of the scale on the Iraqi environment to ensure its suitability for measuring the purpose for which it was developed.³

• Scale Validity

"The validity of the scale is one of the most important conditions for a good test. A valid test succeeds in measuring what it was designed for" (Hassanin, 1995, 183).

The scale was presented to several experts and specialists in the field of sports psychology, so that each of them could express his opinion about the validity of the scale for the purpose for which it was created. Ebel indicated that "the best way to verify apparent validity is for several specialists to estimate the extent to which the paragraphs represent the trait to be measured."⁴

After collecting the scale forms, the researcher found that there was a percentage of agreement between the gentlemen. Experts range between (86-100%) for the scale items, and (Bloom) indicates that "it is on the researcher must obtain approval of (75%) or more of the arbitrators' opinions in this type. From honesty" (Bloom et al., 1983, 196)

Therefore, the scale is considered valid for measuring the purpose for which it was developed, which is to identify the causes of psychological stress.

Table 1: Shows the percentage of agreement of the arbitrators on the items of the scale of causes of psychological stress for the sports coach

Scale paragraph numbers	Total paragraphs	Number of arbitrators agreeing	Agreement rate
,9,8,7,6,4,3,2,1 ,15,14,13,12,11,10 ,23,21,19,18,17,16 30,29,28,26,25,24	26	7	%100
27,22,20,5	4	6	%86

Scale stability

"A tool is considered stable if it gives the same results in measuring the phenomenon repeatedly."

To obtain the stability of the scale, the retest method was used by distributing the scale to (10) female students, then the scale was re-distributed to the same group after (14) days had passed, as Adams indicates that "the time period between the first

application of the tool and the second application should not be less than two or three weeks.”⁵

By extracting the Pearson correlation coefficient between the first and second tests, it was found that the reliability coefficient was equal to 0.86, and such a coefficient is considered acceptable according to the general scale for evaluating the significance of the correlation.

Second: Performance scale of the 100m hurdles event.

The researcher measured the form of technical performance of the 100-meter hurdles event for female students by obtaining the evaluation of three experts from the track and field teachers who hold the scientific title of professor from the department's teaching staff, through an evaluation form of 10 points for each student.

Exploratory experiment

The purpose of this study is to identify the clarity of the instructions or paragraphs of the psychological stress scale and the performance of the 100-meter hurdles event, as well as to know the integrity of the paragraph formulation and its clarity to the experimenter, and to identify the optimal and appropriate method in the way of implementing the main experiment, the clarity of the answer instructions for the individuals of the research sample, as well as the time taken to answer the paragraphs of the psychological stress scale. Therefore, the scale was applied to a sample of 10 female students on Sunday and Monday, corresponding to 3/15-16/2024. The experiment showed that the instructions and paragraphs of the scale were clear and understood by the sample individuals, and that the average time taken to answer the scale was 17 minutes.

Table 2: Shows statistical indicators for the psychological stress scale

Statistical indicator	value
Number of final scale items	50
Highest hypothetical score for the scale	250
Minimum hypothetical score for the scale	50
Hypothetical mean of the scale	150
Range	139
Skewness	0.165
Kurtosis	0.41-

Table 3: Shows statistical indicators for the performance of the 100m hurdles event

Statistical indicator	value
Maximum performance value	10
Skewness	0.478
Kurtosis	0.52-

Tables (2) and (3) show that the number of paragraphs of the psychological stress scale in its final form consists of (30) paragraphs, and the highest hypothetical score for the scale is (150), and the lowest hypothetical score is (30), and the hypothetical average for the scale is (90), and the range of the scale is (93), as well as the skewness (0.478) and kurtosis (-0.52) , and thus the scale is ready for final application.

As for the performance of the 100-meter hurdles event, it was found that the arithmetic mean for the female students was

(4.39), the standard deviation was (1.38), the range of scores was (3.58), as well as the skewness (0.478) and kurtosis (-0.52). Thus, the form is ready for final application.

Statistical methods: The researcher used the Statistical Package for Social Sciences (SPSS) and it extracted the appropriate statistical methods.

RESULTS

Presentation, analysis, and discussion of the results of psychological stress among female students in the Department of Physical Education and Sports Sciences.

To verify this goal, the researcher used the simple Pearson correlation test to identify the relationship between psychological stress and the performance of the 100-meter hurdles running event among the research sample members, female students of the Department of Physical Education and Sports Sciences at the College of Education for Girls at the University of Kufa. It is significant at a significance level of 0.05. Since the arithmetic mean of the sample is greater than the hypothetical mean, this means that female students of the Department of Physical Education and Sports Sciences enjoy moderate psychological stress. And acceptable performance in the 100m hurdles event, and statistically significant. Table (3) shows this.

Table 4: Shows the results of the correlation test for the significance of psychological stress and the performance of the 100-meter hurdles running event among female students in the Department of Physical Education and Sports Sciences.

The group	number	Correlation :coefficient value The calculated	Significance
Students of the Department of Physical Education and Sports Sciences	47	0.698 -	function

The research results showed a statistically significant inverse correlation between the level of psychological stress and the performance of the 100-meter hurdles event among female students, meaning that a high level of psychological stress is matched by a low level of physical and skill performance in this event, and vice versa.

This result is consistent with scientific logic, which assumes that athletic performance, especially in fast and complex events such as hurdles, requires a high level of mental focus, self-confidence, and emotional control, all of which are negatively affected by high levels of stress.⁶

Psychologically, this relationship can be explained by Attentional Capacity Theory, which suggests that increased psychological stress depletes attentional resources, reducing the ability to process fine motor stimuli during performance. Students experiencing anxiety or stress are more prone to distraction, leading to poor motor coordination and delayed response when crossing obstacles.⁷

The results can also be interpreted according to the Yerkes-Dodson Law, which asserts that the relationship between arousal

and performance is an inverted U- U-shaped curve, with performance peaking at a moderate level of arousal and then deteriorating beyond this threshold toward high levels of anxiety or stress. This explains the lower performance of students who experience high levels of stress, as this condition leads to increased muscle tension, a rapid heart rate, and disturbances in motor rhythm when crossing obstacles.⁸

These results are consistent with the findings of previous studies, such as Abdul Karim's study (2021) , which showed that high psychological stress among female students in colleges of physical education leads to a clear decrease in the accuracy of motor performance, and Ali's study (2020) , which indicated that athletes who possess effective strategies for controlling psychological stress show higher performance in fast-paced events that require mental focus.⁹

From a practical perspective, stress management is a crucial factor in improving athletic performance, especially in events that require high speed and precise movement sequences, such as the 100-meter hurdles. Therefore, psychological and applied training programs should be incorporated into female athletes' training curricula, including techniques such as progressive muscle relaxation, deep breathing, mental visualization of performance, and time and competition management. This will enhance self-confidence and reduce pre-performance anxiety.¹⁰

The inverse relationship between stress and performance confirms the importance of psychological balance as a prerequisite for athletic achievement. The more a student can control her emotions and direct her energy toward performance, the better her running time and coordination in overcoming obstacles will be, and vice versa.

CONCLUSIONS

1. The research results showed a statistically significant inverse correlation between psychological stress and the level of performance in the 100-meter hurdles event, meaning that a high level of psychological stress leads to a decrease in the level of motor and temporal performance among female students.
2. is a negative factor affecting a student's concentration and motor accuracy during performance, especially during critical stages such as starting and overcoming obstacles.
3. Reducing psychological stress contributes to achieving emotional balance and increasing self-confidence , which positively impacts motor response speed and improves neuromuscular coordination.
4. The results show that the psychological aspect plays a pivotal role in athletic performance, alongside the physical and skill aspects, which requires attention in academic and applied training.
5. The results indicate that an educational and training environment that takes into account the psychological aspects of female students helps improve overall performance in athletics events, especially complex events such as hurdles.

Recommendations

1. The necessity of integrating guidance and psychological programmes into the training plan in the Department of Physical Education and Sports Sciences, aiming to teach female students methods of controlling psychological stress and managing emotions before and during competition.
2. Training students on mental relaxation skills, deep breathing, and mental visualization of performance, as these play an effective role in reducing anxiety levels and improving concentration while running.
3. Encourage teachers and trainers to adopt psychologically stimulating educational strategies that rely on encouragement and mutual trust rather than criticism or punishment, to reduce stress and improve motivation.
4. Conduct future studies that examine the impact of psychological stress on other athletic events or team sports, to expand our understanding of the relationship between mental health and athletic performance.
5. Calling on the college to provide institutional psychological support for female students through specialized university guidance units concerned with monitoring academic and training pressures and their impact on athletic performance.
6. Emphasizing that the balance between psychological and physical preparation is one of the most important pillars of achieving success in events that require speed, accuracy, and high motor coordination, such as the 100-meter hurdles event.

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