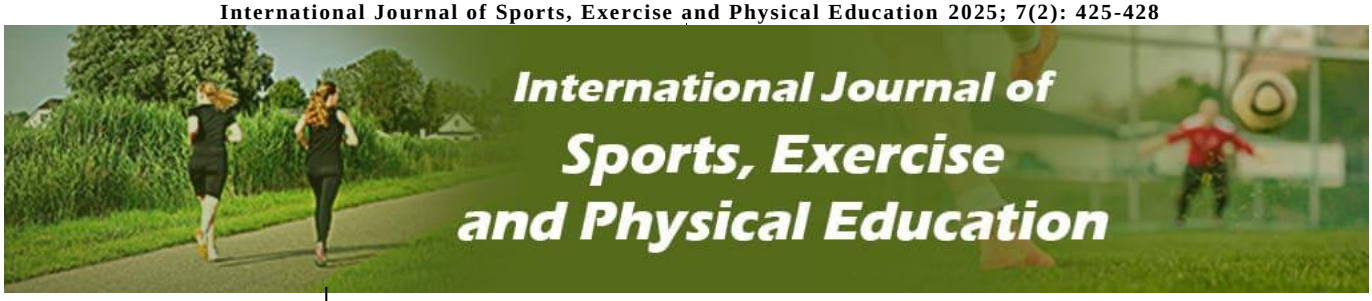

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Psychological flow and its relationship to the performance of forward and backward rolling skills in the straddle position among female students of the college of physical education and sport sciences at the University of Diyala

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Abstract
This study investigates the role of psychological flow in the execution of forward and backward rolling skills in the straddle position within artistic gymnastics. Psychological flow, defined as a state of deep immersion and optimal performance, is considered a critical factor in athletic achievement. The research aims to assess the level of psychological flow and its correlation with the performance of these specific gymnastic skills among second-year female students at the College of Physical Education and Sport Sciences, University of Diyala.
A descriptive research design was employed, involving a sample of 60 female students during the academic year 2024-2025. Data collection occurred over a one-month period (April 7 to May 7, 2025) within the college's designated gymnastics hall. The Psychological Flow Scale developed by Hawar Ma'soum (2021) was used alongside standardized performance tests for forward and backward rolling in the straddle position.
Results indicated a statistically significant relationship between psychological flow and skill execution. A positive correlation was found with the forward rolling skill, which is generally perceived as less complex and more accessible. In contrast, a negative correlation emerged with the backward rolling skill, likely due to its higher technical demands and the challenge of backward movement coordination. These findings underscore the influence of psychological flow on motor performance in gymnastics and highlight its potential as a predictive factor for skill proficiency.

Keywords: Psychological flow, forward and backward rolling skills in the straddle position

1. Introduction

1.1 Background and Significance of the Study

Psychological flow is considered one of the modern and positive constructs in the field of psychology, with a notable impact on human performance. It reflects a state in which the individual becomes fully immersed in executing a skill or activity, experiencing heightened concentration and engagement. Psychological flow is also used as an indicator of mental and emotional well-being. According to Alaq Thaer Zaki (2015, p. 989) [8], psychological flow is defined as "a powerful motivational force that drives the individual into complete immersion in an activity, reflecting a high level of self-esteem, leading to enjoyment and creativity. Intrinsic motivation is sustained only when the activity itself is enjoyable."
The significance of this study lies in its exploration of psychological flow within the athletic context, particularly its role in enhancing performance quality and skill execution. The research investigates the relationship between psychological flow and the performance of forward and backward rolling skills in the straddle position within artistic gymnastics among second-year female students. Artistic gymnastics is regarded as one of the distinguished individual sports, practiced by both athletes and non-athletes. The forward and backward rolling skills in the straddle position are typically performed on the floor exercise apparatus, which is characterized by its accessibility and suitability for doing gymnastic movements easily.

The current research problem emerged from the researcher's observations as an instructor of gymnastics, noting the pivotal role of psychological flow in enhancing the motivation of second-year female students to learn and perform gymnastic skills in general, and specifically the forward and backward rolling skills in the straddle position. When executing these skills, students tend to experience increased self-confidence, optimism, happiness, and a heightened ability to concentrate during both the explanation and application phases. These positive psychological states occur in the absence of anxiety, tension, low self-esteem, or fear of failure. Psychological flow is considered a modern and constructive variable in sports psychology, contributing to elevated levels of skill performance. The researcher observed individual differences in psychological flow among the students, which may influence their execution of gymnastic movements. Accordingly, the research problem is framed through the following central question:

Does psychological flow play a role in the variation of performance levels in forward and backward rolling skills in the straddle position among second-year female study.

1.2 Objective of the Study

To identify the level of psychological flow and its relationship to the performance of forward and backward rolling skills in the straddle position among second-year female students at the College of Physical Education and Sport Sciences, University of Diyala.

1.3 Hypothesis of the Study

There is a statistically significant correlation between psychological flow and the performance of forward and backward rolling skills in the straddle position among second-year female students at the College of Physical Education and Sport Sciences, University of Diyala.

1.4 Domains of the Study

- Human Domain: Second-year female students at the College of Physical Education and Sport Sciences, University of Diyala, during the academic year 2024-2025.
- Temporal Domain: From April 7 to May 7, 2025.
- Spatial Domain: Gymnastics hall at the College of Physical Education and Sport Sciences, University of Diyala.

1.5 Definition of Terms

- Psychological Flow: "A state of deep concentration that occurs when individuals become fully immersed in tasks requiring intense focus, persistence, and sustained effort. This state is achieved when the individual's abilities and skills are perfectly balanced with the level of challenge or difficulty associated with the task—particularly tasks with clearly defined goals and immediate feedback." (Csikszentmihalyi, 1996) [3].

2. Materials and Methods

2.1 Method of the Study

Psychological research is among the most common fields to adopt the descriptive method due to its suitability for exploring behavioral and cognitive phenomena. Accordingly, the researcher employed the descriptive approach, as it aligns with the nature of the current research problem.

2.2 Research Population and Sample

The population of the study refers to "the entire group of elements to which the researcher seeks to generalize findings related to the studied problem" (Wajih Mahjoub, 2004, p. 222) [6]. The researcher selected second-year female students at the College of Physical Education and Sport Sciences, University of Diyala, as the research population for the academic year 2025-2026, totaling 80 students. A pilot sample of 10 students was selected to conduct preliminary testing, while another 10 students were excluded due to irregular attendance and lack of commitment to official class schedules.

2.3 Devices, Instruments, and Data Collection Tools

2.3.1 Devices and Instruments Used: Dell laptop, floor exercise mats, ballpoint pens. 2.3.2 Data Collection Tools: Arabic and English references, internet resources, related studies, direct observation, Psychological Flow Scale by Hawar Ma'soum Aziz (2021), performance tests for forward and backward rolling skills in the straddle position, supporting research team

2.4 Field Procedures

To achieve the objective of the study, the following tools were required: a standardized scale to measure psychological flow, and performance tests for forward and backward rolling skills in the straddle position within artistic gymnastics.

2.4.1 Adoption Procedures for the Psychological Flow Scale

Having reviewed several psychological flow scales, the researcher adopted the scale developed by Hawar Ma'soum (2021), as it was deemed the most appropriate for the study context. The scale consists of 38 items distributed across six dimensions: Balance between challenge and skill, engagement in performance, sense of control, intrinsic enjoyment, psychological energy, perceived success experience. Minor modifications were made to the wording of certain items to better suit the objectives and context of the current study.

2.5 Forward Rolling Skill Test in the Straddle Position (Firdows Majid Amin, 2015, p. 18)

Objective of the Test: To assess the ability to perform the forward rolling skill in the straddle position.

Required Equipment: Floor exercise mat

Performance Specifications:

- The student begins in a standing straddle position with legs apart and arms extended forward or upward.
- She bends forward, flexes the knees, and places both hands on the mat between the legs.
- The body is propelled forward, shifting weight onto the hands, with the crown of the head placed gently on the mat to initiate the forward roll.
- During the rolling motion, the legs are slightly opened while maintaining body flexion.
- The movement concludes with the student returning to a standing straddle position, maintaining balance and postural control.

2.6 Pilot Study
The researcher conducted a pilot study on a sample of 10 female students from the research population on Monday, April 7, 2025, at 9:00 a.m. in the designated gymnastics hall for female students. The Psychological Flow Scale was distributed to the sample, and upon completion of the responses, the scales were collected and the performance tests for forward and backward rolling skills in the straddle position were administered. The purpose of the pilot study was to identify potential obstacles that might arise during the main experiment, to determine the time required to complete the scale items, and to assess the efficiency of the supporting research team.

2.7 Main Experiment: The main experiment was conducted on the full research sample of 60 female students on Thursday, April 10, 2025, in the gymnastics hall at the College of Physical Education and Sport Sciences, University of Diyala. The Psychological Flow Scale was distributed to the participants in the presence of the supporting research team. The sample required approximately 15 minutes to complete the 38-item scale. On Sunday, April 13, 2025, the performance tests for forward and backward rolling skills in the straddle position were administered to the entire sample.

2.8 Statistical Tools
The researcher utilized the Statistical Package for the Social Sciences (SPSS) to analyze and process the collected data.

Presenting Results

Table 1: Illustrates the correlation coefficients between psychological flow and the performance of forward and backward rolling skills in the straddle position

Statistical Treatment / Variables	Unit	Mean x̄	STD Deviation σ	Correlation coefficient	Margin of Error	Significance
Psychological flow	Mark	130.967	17.170			
Forward rolling	Mark	8.067	1.376	.658**	.000	Significant
Backward rolling	Mark	7.400	1.61770	-0.267*	.039	Significant l

3. Discussion
The mean score of psychological flow was (130.967) with a standard deviation of (17.170), indicating a relatively high level of psychological flow among the students. This suggests that the participants experienced a positive psychological state during performance. These findings are supported by the study of Yarayen *et al*. (2025), which emphasized that mental immersion and psychological energy are key contributors to psychological flow.

As for the forward rolling skill in the straddle position, the mean score was (8.067), reflecting a high level of performance among the students. The standard deviation of (1.376) indicates moderate variability, with most scores clustering around the mean. The correlation coefficient between psychological flow and forward rolling performance was (0.658), signifying a strong positive relationship. This implies that higher levels of psychological flow are associated with improved performance. Field (2021) notes that standard deviation reflects natural variation among individuals, and moderate values are typical in sports science research. In contrast, the mean score for the backward rolling skill in the straddle position was (7.400), which is lower than that of the forward roll. The standard deviation was (1.61770), and the correlation coefficient was (-0.267), indicating a weak negative relationship. This suggests that some students, despite experiencing psychological flow, may encounter increased anxiety and fear due to the complexity of the backward movement. Jackson & Martin's findings support this interpretation, stating that highly challenging skills can diminish psychological flow, especially in the absence of psychological support and self-confidence.

4. Conclusion
The researcher concluded that psychological flow plays a significant role in enhancing students' engagement and optimal performance of gymnastic skills. Psychological flow was positively correlated with the easier skill—front rolling in the straddle position—and negatively correlated with the more difficult skill—rolling in the straddle position, which some students found challenging due to the backward motion. A statistically significant relationship was found between psychological flow and the performance of both skills among second-year female students at the College of Physical Education and Sport Sciences, University of Diyala, thereby confirming the research hypothesis. Accordingly, the researcher recommends conducting similar studies on other skills and sports disciplines, linking them to psychological flow due to the importance of mental well-being in students' athletic engagement. Students should also be encouraged to avoid negative influences and individuals with low psychological energy, as such factors may adversely affect their health and performance.

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