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The Effect of the Fair Inquiry Strategy on Some Ground Movement Skills in Artistic Gymnastics for Students

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Abstract

The importance of this research lies in helping students develop their skills in some floor exercises in gymnastics by using modern teaching strategies. The research aimed to identify the effect of the fair inquiry strategy on some floor exercise skills in artistic gymnastics for students. The researcher used the experimental research method as it was compatible with solving the problem to be investigated. He used an equivalent experimental and control group design. The research community was represented by second-year students in the College of Physical Education and Sports Sciences/University of Wasit for the academic year (2024-2025), numbering (110) students distributed among (5) classes, each consisting of (22) students: (A, B, C, D, E). Class (B) was selected by lottery as an experimental group, and Class (D) as a control group. The researcher concluded that the fair inquiry strategy led to the development of some floor exercise skills in artistic gymnastics for students.

Keywords: Fair Inquiry Strategy, Floor Movements In Gymnastics.

Introduction

The recent years have witnessed tremendous progress and development in various aspects of life, especially in the educational and learning fields. Among the areas covered by this development is the diversity in applying teaching strategies, methods, and approaches. Teaching bodies now bear a significant burden to keep pace with this modernization and development, thus requiring them to exert more effort to reach these advancements. Education is considered one of the most important processes that play a crucial role in enhancing students' cognitive and practical capabilities due to its positive and comprehensive impact on learning based on renewed and modern scientific foundations.

The teaching strategies used by the instructor serve as a means of organizing and directing the educational situation to achieve educational goals with the least possible time and effort. Teaching strategies and methods have evolved, leading to the emergence of several modern strategies, including the fair inquiry strategy. This strategy aims to develop critical and analytical thinking skills among students by engaging them in the process of research and exploration to reach knowledge themselves. This strategy relies on providing all students with equal

opportunities to participate in research, analyze information, and draw logical conclusions based on evidence, thereby promoting the principle of fairness in education. This strategy helps in developing problem-solving and decision-making skills, making the student the center of the educational process. It encourages independent thinking and cooperation with peers to achieve a deeper understanding of the presented concepts. It also contributes to enhancing self-confidence and providing a learning environment that stimulates creativity and innovation, making learning more interactive and impactful.

Gymnastics is considered one of the difficult individual sports that requires appropriate teaching methods, approaches, and strategies to advance the level of artistic performance in the sport, especially in some ground movement skills. Herein lies the importance of the research in helping students develop their skills in some ground movements in gymnastics by using modern teaching strategies.

1-2. Research Problem:

Artistic gymnastics is a sport that demands a wide variety of skilled performances, especially in movements executed on the floor exercise mat, which are classified as challenging motor activities. Given the high level of difficulty involved, it has become essential to adopt modern teaching strategies that align with the nature of these skills, thereby contributing to the development of motor performance and the achievement of high levels of mastery.

Through the researcher's experience with teaching methods and gymnastics activities, including floor exercises, it was found that the performance of skills in floor exercises on the mat in artistic gymnastics does not meet aspirations, despite the existence of various teaching methods, approaches, and strategies. The researcher believes that some of these do not encourage independent thinking and cooperation with peers when performing skills, which leads to a lack of self-confidence during skill execution and consequently difficulty in learning them.

Therefore, the researcher decided to study this problem by experimenting with a modern strategy, namely the fair inquiry strategy, in teaching some motor skills of floor exercises in artistic gymnastics to students. This strategy empowers students to research and explore in a fair learning environment, guiding them to discover concepts and skills themselves through questioning, observation, and experimentation. It enhances critical thinking and decision-making, helping them acquire motor skills more effectively and assimilate them in a deep and sustainable manner.

By applying this strategy, the researcher aims to provide an interactive learning environment that contributes to improving students' learning of floor exercise skills in artistic gymnastics. Educational opportunities are distributed fairly among all students, which helps in accommodating individual differences, enhancing their self-confidence, and motivating them to actively participate in the educational process.

1-3. Research Objectives:

•To identify the effect of the fair inquiry strategy on some ground movement skills in artistic gymnastics for students.

•To identify the differences in post-tests between the experimental and control groups in some ground movement skills in artistic gymnastics for students.

1-4. Research Hypotheses:

•The fair inquiry strategy has an effect on some ground movement skills in artistic gymnastics for students.
•There are differences in the effect between the experimental and control groups in some ground movement skills in artistic gymnastics for students in the post-tests.

1-5. Research Scope:

1-5-1. Human Scope: Second-year students / College of Physical Education and Sports Sciences.
1-5-2. Time Scope: From 1/10/2024 to 2/12/2024.
1-5-3. Spatial Scope: Sports Hall / College of Physical Education and Sports Sciences.

1-6. Definition of Terms:

Fair Inquiry Strategy: The researcher operationally defines it as a teaching strategy that relies on dividing students into groups, with each group representing a different point of view on a controversial issue. Through research, discussion, and exchange of opinions among groups, a common opinion is reached that supports the lesson's objectives.

2. Research Methodology :

2-1. Method:

The researcher adopted the experimental research method as it is compatible with solving the problem to be investigated and used the design of two equivalent groups, experimental and control.

2-2. Research Population and Sample:

The research population was identified as second-year students in the College of Physical Education and Sports Sciences/University of Wasit for the academic year (2024-2025), numbering (110) students distributed among (5) sections, each consisting of (22) students: (A, B, C, D, E). By lottery, section (B) was chosen as the experimental group and section (D) as the control group. The exploratory sample was randomly selected by the researcher from section (A) and consisted of (10) students, thus the sample size reached (49.09%) of the total research population.
To ensure that the results are moderately distributed among the research sample individuals, the researcher sought to confirm the homogeneity among them using the skewness coefficient to control all variables that might affect performance (height, mass, chronological age). The skewness coefficient values were (-0.554), (0.643), and (0.451) respectively. Since all values were confined between (±1), this indicates the homogeneity of the research sample individuals. After dividing the sample into two groups, the researcher conducted equivalence between them to ensure starting from the same baseline for both groups in all research variables, as shown in Table (1).
Table 1. Shows the equivalence of the sample in the research variables under study

No.	Variables	Unit of Measurement	Experimental Group	Control Group	Calculated T-value	Confidence Level	Significance Type		
			Mean ($\bar{X}$)	SD (σ)	Mean ($\bar{X}$)	SD (σ)			
1	Handstand	Score	3.136	0.710	3.045	0.722	0.421	0.676	Not Significant
2	Side Roll		3.318	0.716	3.181	0.795	0.598	0.553	
3	Flying Forward Roll		2.727	0.702	2.636	0.789	0.403	0.689	

(*) Degrees of Freedom (42)
(*) Significant at confidence level (0.05) if error level ≤ (0.05).

2-3-1. Data Collection Tools:

•Scientific observation.
•Objective tests and measures.
•Internet.
•Arabic and foreign sources.

2-3-2. Devices Used in the Research:

•Electronic stopwatch (2) of CASIO brand, made in Japan.
•Photography camera for analysis, Sony brand, at 240 frames/sec.
•Scale for mass measurement, Sartorius brand, German origin, (2).
•Laptop (Dell brand, Korean origin).

2-3-3. Equipment Used in the Research:

•Measuring tape.
•Gymnastics mat.

2-4. Field Research Procedures:

2-4-1. Defining Research Variables:

Research variables were defined based on the researcher's personal experience as a specialist in teaching artistic gymnastics, which are (handstand, side roll, flying forward roll).

2-4-2. Evaluating Artistic Performance:

The researcher video-recorded the performance of the three skills (pre and post) for both experimental and control groups, then presented them to the evaluators after storing them on compact discs (CDs) along with the evaluation form (approved by the Iraqi Gymnastics Federation). The skills were evaluated by three evaluators (judges), and the sum of the three scores was divided by three to get the final score for each skill, noting that the final score for the form is between (0-10).

2-4-3. Exploratory Experiment:

The researcher conducted an exploratory experiment on a group of (10) students in the sports hall of the College of Physical Education and Sports Sciences/University of Wasit on Sunday, October 6, 2024. "This experiment serves as field training for the researcher to identify and overcome shortcomings in the main experiment" (Jabri, 2024, p.75). It aimed to:

•Determine the time required to perform the tests (performance evaluation).
•Determine the efficiency of the assistant team and assign duties to them.
•Determine the validity of the tools and equipment used in the research.
•Identify obstacles and shortcomings that may accompany the performance of tests and work to overcome them in the main experiment.
•Assess the suitability of the fair inquiry strategy for the research sample's level.

2-4-4. Pre-tests:

The researcher conducted the pre-tests (pre-assessment) for both experimental and control research groups at 10:00 AM on Wednesday, October 9, 2024, in the sports hall of the College of Physical Education and Sports Sciences/University of Wasit. The conditions related to the tests, in terms of place, time, and tools used, were standardized to ensure similar conditions as much as possible and to guarantee their availability in the post-tests.

2-4-5. Main Experiment (Application of the Fair Inquiry Strategy):

The main experiment began on Sunday, October 13, 2024, at 10:30 AM and ended on Wednesday, November 27, 2024. In this phase, "the fair inquiry strategy was applied to the experimental group individuals in the main section. The researcher considered the aspects emphasized by this strategy, starting from defining the problem or research question, dividing students into small groups with diverse opinions, providing multiple sources of information, directing questions to students, encouraging critical thinking and fair discussion, then providing feedback and stimulating deep thinking, and finally documenting and sharing the results and agreeing on the best ones. As for the control group, their educational units followed the traditional method. The educational units continued for (7) weeks, with two units per week, totaling (14) educational units."

2-4-6. Post-tests:

The researcher conducted the post-tests (post-assessment) for both research groups on Sunday, December 1, 2024. The researcher followed the same method used in the pre-tests after the completion of the designated experimental period, which lasted seven weeks. The researcher was

keen to provide all the conditions for the pre-tests and their requirements when conducting the post-tests in terms of time, place, and testing tools.

2-5. Statistical Methods:

The statistical package (SPSS26) was used to extract the following laws:
•Arithmetic mean.
•Standard deviation.
•Median.
•Skewness coefficient.
•t-test for paired samples.
•t-test for independent samples.

3. Results:

3-1. Presentation and Analysis of Pre and Post-test Results for Variables (Handstand, Side Roll, Flying Forward Roll) for Both Research Groups:

3-1-1. Presentation and Analysis of Pre and Post-test Results for Variables (Handstand, Side Roll, Flying Forward Roll) for the Experimental Group:

Table 2. Shows the results of pre and post-tests for the experimental group

Test	Unit of Measurement	Pre-test		Post-test		Calculated T-value	Sig.	Significance
		Mean ($\bar{X}$)	SD (σ)	Mean ($\bar{X}$)	SD (σ)			
Handstand	Score	3.136	0.710	4.318	0.945	5.266	0.000	Significant
Side Roll		3.318	0.716	4.454	0.800	5.665	0.000	
Flying Forward Roll		2.727	0.702	4.000	0.925	7.218	0.000	

(*) Degrees of Freedom (21)
(*) Significant at confidence level (0.05) if error level ≤ (0.05).

3-1-2. Presentation and Analysis of Pre and Post-test Results for Variables (Handstand, Side Roll, Flying Forward Roll) for the Control Group:

Table 3. Shows the results of pre and post-tests for the control group

Test Name	Unit of Measurement	Pre-test		Post-test		Calculated T-value	Sig.	Significance
		Mean ($\bar{X}$)	±SD (σ)	Mean ($\bar{X}$)	±SD (σ)			
Handstand	Score	3.045	0.722	3.636	0.902	4.695	0.000	Significant
Side Roll		3.181	0.795	3.818	0.852	6.062	0.000	
Flying Forward Roll		2.636	0.789	3.318	1.041	6.708	0.000	

(*) Degrees of Freedom (21)
(*) Significant at confidence level (0.05) if error level ≤ (0.05).

3-1-3. Presentation of Post-test Results for Both Experimental and Control Groups:

Table 4. Shows the post-tests for both experimental and control groups

Test Name	Unit of Measurement	Experimental Group		Control Group		Calculated T-value	Sig.	Significance
		Mean ($\bar{X}$)	±SD (σ)	Mean ($\bar{X}$)	±SD (σ)			
Handstand	Score	4.318	0.945	3.636	0.902	2.447	0.019	Significant
Side Roll		4.454	0.800	3.818	0.852	2.552	0.014	
Flying Forward Roll		4.000	0.925	3.318	1.041	2.295	0.000	

(*) Degrees of Freedom (42)
(*) Significant at confidence level (0.05) if error level ≤ (0.05).

3-2. Discussion of Results:

After reviewing the results presented in Tables (2), (3), and (4), it becomes clear that there is a significant development for both groups (experimental and control) in the three variables (handstand, side roll, flying forward roll), as all results were significant. However, the experimental group showed a better level of development than the control group.
The researcher attributes the superiority of the experimental group over the control group to the use of the fair inquiry strategy. Shaniar Ni'mat indicates that a successful teacher is one who chooses appropriate teaching strategies, methods, and approaches and uses educational means and capabilities in the correct and appropriate manner in light of the needs and desires of learners [Ni'mat, 2024, p.490]. This strategy worked to enhance critical thinking and problem-solving

among students by providing an interactive learning environment that encourages students to analyze data, draw conclusions, and make decisions based on available evidence. Ilham Mohammed Reda states, "In light of the rapid scientific and technological development, objectives based on memorizing information are no longer suitable for teaching; instead, attention is focused on objectives that equip students with skills through which they can investigate facts themselves" [Reda, 2019, p.549].

It also helped increase students' motivation for learning, as this strategy stimulates student participation by involving them in the research and inquiry process, which increases their interest in the topics presented and makes them more interactive with the educational content. It also worked to develop cooperation and communication skills because it relies on teamwork and the exchange of viewpoints among students, which enhanced communication and collective thinking skills and provided opportunities to discuss and analyze ideas from different angles. Hind Qasim and Alaa Jawad indicate that this strategy relies on collecting information from multiple sources, as learners participate in collecting it as a collective project [Mahalhal and Kadhim, 2024, p.494]. It also worked to promote a deep understanding of concepts instead of mere memorization and retrieval, and this strategy helped students build a solid understanding of concepts through experimentation, exploration, and linking new knowledge with their previous experiences [Mohsen et al., 2021].

Based on these factors, the superiority of the experimental group over the control group can be explained by the effective role of the fair inquiry strategy in developing cognitive skills, enhancing self-learning, and enabling students to apply knowledge in real-world situations, which led to their achieving better academic results compared to the control group that was not exposed to this strategy.

4. Conclusions and Recommendations:

4-1. Conclusions:

•The fair inquiry strategy led to the development of some ground movement skills in artistic gymnastics for students.

•The fair inquiry strategy achieved superiority over the method used by the instructor in developing some ground movement skills in artistic gymnastics for students.

4-2. Recommendations:

•The necessity of using the fair inquiry strategy by instructors to develop some ground movement skills in artistic gymnastics for students, because most educational units lack this type of strategy.

•Conducting similar research and studies using the fair inquiry strategy for different age groups and both genders, and for other sports activities.

References:

- Shaniar Burhan Ni'mat: The Effect of the Fair Inquiry Strategy on the Performance of the Front Handspring and Aerial Skills on the Floor Exercise Mat in Gymnastics, published research, Journal of Sports Education Sciences, Issue (4), Volume (17), 2024.

- Ali Naji Jabri: The Effect of Functional Strength Training on Some Physical and Motor Abilities and the Performance of Combined Skills in Football for Juniors, Master's Thesis, College of Physical Education and Sports Sciences, University of Wasit, 2019. DOI: 10.13140/RG.2.2.14683.48165

- Ilham Mohammed Reda: The Effectiveness of Using the Fair Inquiry Model in Developing Environmental Awareness and Citizenship Values Among Preparatory Stage Students in Science, published research, Journal of the College of Education, Issue (3), Volume (106), 2019.

- Hind Qasim Mahalhal, Alaa Jawad Kadhim: The Effect of the Fair Inquiry Strategy on Learning the Accuracy, Speed, and Power of Serve in Ground Tennis for Students, published research, Journal of Sports Education Studies and Research, Issue (4), Volume (34), 2024.

- Mohsen, G. A., Hasan, B. B., & Allawi, H. M. (2021). Total Quality Management (TQM) and Sports (Development, Concepts and Definitions). *Indian Journal of Forensic Medicine & Toxicology*, *15*(4), 1211-1216.