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THE EFFECT OF THE SEQUENTIAL METHOD ON LEARNING THE FRONT WALKOVER SKILL AND ITS TRANSFER TO THE ARABIAN HANDSPRING IN GYMNASTICS AMONG SECOND-YEAR STUDENTS IN THE COLLEGE OF PHYSICAL EDUCATION AND SPORT SCIENCES.

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Abstract.
The purpose of this study was to find out how the sequential method affected the second-year College of Physical Education and Sport Sciences students' acquisition of the front walkover skill and how much it helped them transfer their performance to the Arabian handspring skill. The experimental approach was chosen by the researcher because it was the most appropriate for the study's objectives. 510 second-year University of Diyala students in the 2024–2025 academic year made up the research population. After removing students who failed or postponed, 40 students were chosen at random from sections (A) and (C). The sample, which accounted for 7.64% of the total population, was split into two equal groups: 20 in the experimental group and 20 in the control group.

Due to the logical development of actions that matched student skills, the study found that the sequential method greatly enhanced front walkover learning when compared to traditional methods. Furthermore, because the motor components of the Arabian handspring and the front walkover are similar, the sequential strategy improved the transfer of learning from the former to the latter. Pupils who received instruction utilizing the sequential method showed improved motor coordination and confidence when executing both skills.

The researcher recommends adopting the sequential method as a core instructional approach in teaching complex motor skills in gymnastics curricula, integrating closely related skills within educational content, and training gymnastics instructors to develop progressive programs tailored to students' physical and motor needs

Keywords: Sequential Method, Front Walkover Skill, Arabian Handspring Skill, Transfer of Learning, Gymnastics

INTRODUCTION

Learning methods are a fundamental pillar of the educational process, as they directly impact learners' acquisition of knowledge and skills, and the consolidation of both motor and psychological experiences. These

methods have diversified and multiplied according to the development of educational and motor theories, adapting to individual differences among learners and facilitating the transfer of educational impact from one situation to another.

A learning method is defined as the organized approach followed by the teacher to achieve specific educational objectives, taking into account the characteristics, levels, and abilities of learners, enhancing the effectiveness of learning and shortening the time required to acquire the skill. These methods range from those completely directed by the teacher to those that allow learners a wide range of freedom to discover and implement solutions. These include: the declarative method, the gradual method, the problem-solving method, the spaced method, and the sequential method, which is considered an effective method for learning complex skills.

Choosing an appropriate learning method depends not only on the nature of the skill but also includes an analysis of the students' level, the type of educational environment, and the ultimate goal of learning. This makes studying the effects of these methods, especially in the field of physical education and sports activities, a scientific necessity for enhancing the quality of motor performance and developing fine motor responses in students, particularly in complex skills such as gymnastics.

The sequential method is an effective educational method for teaching complex and sequential skills in terms of motor performance. This method is based on dividing the skill into successive stages or parts that are taught gradually according to a logical, interconnected sequence, with an organized transition from one part to the next until the overall performance is mastered. This makes it suitable for teaching gymnastic skills, which are characterized by precise motor structures that require high temporal and muscular coordination, such as the human wheel and the Arab jump.

Learning these skills requires the learner to gradually understand the structure of movement in terms of body direction, balance points, and precise timing of limb movement. These characteristics are fully consistent with the principle of cumulative construction proposed by the sequential method. Instead of presenting the skill as a whole from the outset, this approach allows for learning each part of the skill in isolation and then integrating them later. This contributes to enhancing the understanding of the performance stages and more accurate error handling, and helps transfer the learning effect from one skill to another within the same motor environment (Yıldıran&Koca, 2014).

The importance of this research lies in highlighting one of the most effective teaching methods, the sequential method, and its role in improving the learning of gymnastic skills that require precision and gradual performance, such as the human wheel and the Arabian vault. The choice of this method comes in response to the need to develop teaching methods that are compatible with the nature of complex skills that students find difficult to master using traditional methods.

This research gains its importance from its focus on a group of students at an early stage of academic specialization, where improving skill learning at this stage is a crucial factor in building their basic motor foundation. The use of the sequential method also contributes to facilitating the learning process, reducing errors, and increasing the gradual comprehension of motor components, which positively impacts the quality of performance and the ability to transition from one skill to another within a systematic educational environment.

Hence, this research represents a scientific step towards improving teaching strategies in faculties of physical education and sports sciences, by focusing on methods that are compatible with the nature of skills and enhance the efficiency of the educational process.

Group	Independent Variable	Dependent Variable	Transfer of Learning
Experimental	Sequential Method	Human Wheel	Arab Leap

2-3 Data Collection Methods, Devices, and Tools Used in the Research:

2-3-1 Data Collection Methods:

1. Arabic and foreign sources.
2. Tests.
3. Personal interviews.
4. Test history record form.

2-3-2 Devices and Tools Used in the Research:

Devices:

1. Laptop.
2. Camera.

Tools:

1. Mat.

2. Motion graphics and illustrative tools.

2-4 Learning Assessment:

One of the main instruments used in the processes of assessment, measurement, diagnosis, and direction in the curricula and educational programs used in the faculties of sports sciences and physical education is the test. They are useful in assessing the degree of advancement and achievement in reaching the designated learning goals.

Given the importance of objective assessment of skill performance, video recording was used to document the performance of the research sample members in the human wheel jump and the Arab jump skills during the pre- and post-measurement phases. The video recordings were shown to a committee of gymnastics experts for the purpose of analyzing the performance and determining accurate evaluation scores that reflect the actual level of performance of the participants in the two skills under study.

2-5 Exploratory Experiment:

The exploratory experiment gives the researcher hands-on practice in recognizing and avoiding the test's positives and negatives.

With the help of the support team, the researcher carried out an exploratory experiment on Sunday, February 16, 2025, on a group of four second-year non-gymnastic students who were not part of the research sample. The following was the experiment's goal:

1. To determine the ability of the selected sample to perform the educational exercises.
2. To determine the timeframe for conducting the tests.
3. To determine the appropriate location for the camera.
4. To determine the adequacy of the team's capabilities and understanding of the tests.
5. To confirm the validity of the tools and equipment used.
6. Preparing requirements to maintain the safety and security of the female students taking the tests.

2-6 Field Research Procedures:

2-6-1 Pretests:

Before conducting the pretests, the researcher organized the research sample members by accurately recording their names. This was followed by an educational module that included a detailed explanation of the correct performance of the human wheel jump skill, explaining its theoretical and practical steps. The module was then implemented by the sample members on Thursday, February 20, 2025.

Accordingly, the researcher conducted the pretests on the sample members on Sunday, February 23, 2025, inside the Gymnastics Hall at the College of Physical Education and Sports Sciences at the University of Diyala, with the aim of measuring the initial level of performance in the skill under study. 2-6-2 Educational Curriculum:

The educational curriculum prepared by the researcher for the experimental group began on Sunday, March 2, 2025, and continued until Thursday, March 27, 2025. The curriculum included the following:

1. Skills were learned through additional lectures according to the university's sectoral schedule, and implemented by the same subject instructor. Each lecture included a warm-up, physical exercises, educational activity, and a concluding section. However, the practical activity differed, as the experimental group used only the sequential learning method.

2. The human wheel leap was taught to the experimental group using the sequential learning approach. Eight educational units, divided into two units per week for each group, made up the four-week educational program. Each teaching unit lasted 45 minutes and was divided up as follows:

- Preparatory section (10) minutes.
- Main section (30) minutes, (5) instructional minutes, and (25) practical minutes.
- Final section (5) minutes.

3. The educational curriculum is limited to learning the human wheel skill only, and then measuring the transfer of its effect to learning the Arab jump skill for the research sample members.

2-6-3 Post-tests:

Similar to the pre-tests, the post-tests were administered on April 2, 2025, in the gymnastics hall of the University of Diyala's College of Physical Education and Sports Sciences.

2-7 Statistical Methods:

The researcher used the statistical program (SPSS) to extract the research results and process the data.

3- Presentation, Analysis, and Discussion of the Results

3-1 Presentation of the results of the pre- and post-tests for the experimental group.

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Table (2)
displays the results of the experimental group's pre- and post-test arithmetic means and standard deviations for the Arab jump and human wheel.

Variable	Pre		Post	
	s ó	±a	s ó	±a
Human Wheel	*2.7*	*0.801*	*5.875*	*1.024*
Arab Leap	*2.45*	*0.856*	*5.95*	*1.122*

3-2 Presentation and discussion of the results of the pre- and post-tests for the experimental group.

Table (3)
displays the mean differences, mean deviations, and computed t-test value for the experimental group's human wheelie jump pre- and post-test results.

Variable	M.D	SD.D	Calculated (t) Value	Error Rate	Significance
Human Wheel	3.175	1.115	12.73	0.00	Significant

The experimental group's arithmetic mean, standard deviation, and computed value of (t) in the human wheel jump are displayed in Table (3). The computed value of (t) reached (12.73) with an error rate of (0.00), and the value of the difference of the means reached (3.175) with a deviation of differences of (1.115). This suggests that the experimental group's pre- and post-test results differed significantly, favoring the post-test. The educational curriculum used with the research sample, which considered how to use learning in accordance with the sequence of performing the human wheel jump while providing feedback on correcting errors, is credited by the researcher with explaining this development in the level of learning the human wheel jump in the experimental group that employed the sequential learning method. It is "one of the learning methods that uses repetition of the skill in order to learn it automatically and smoothly, while observing individual differences and benefiting from good learners in order to make an effort in teaching and achieving what is specified for the skill" (Alwan: 2002: 42). The school begins by explaining the skill to the learners according to the parts of the skill from the introductory part, and after mastering this part, the transition is made to the next part, and so on. After that, the application process is carried out by the learners, and the school's duty is to supervise and monitor without interfering in the application process. As for the process of correcting errors, it is done through feedback on performance or the result, and with the school's intervention, which made the errors disappear after each correction process. This is because the process of correcting errors at the beginning of the acquisition process is one of the necessary matters for the learner to reach the process of mastery in learning the skill in the future by creating an integrated motor program for the skill. The learner was error-free, which indicates the importance of using a sequential learning approach combined with performance-specific feedback. The importance of providing performance-based feedback increases to improve the motor pattern of beginners when learning a new motor skill. The teacher must provide feedback to beginners to help them learn, as "for learning to occur in the student, the physical education teacher must provide meaningful and useful feedback." (Al-Kazemi, 1998: 87)

3-3 Transfer of learning effects from learning the human wheel jump to the Arab jump for the experimental group: The mean difference values, mean deviations, and computed t-value for the experimental group's Arab jump pre- and post-tests are displayed in Table (4).

Variable	M.D	SD.D	Calculated (t) Value	Error Rate	Significance
Arab Leap	3.5	1.317	11.877	0.00	Significant

The arithmetic mean, standard deviation, and computed (t) value for the experimental group in the Arab Leap test are displayed in Table (4). The estimated (t) value reached (11.877) with an error rate of (0.00), and the value of the difference in means reached (3.5) with a deviation of differences of (1.317). This suggests that the experimental group's pre- and post-test results differed significantly, favoring the post-test. From Tables (6) it is clear to us that there is a positive effect of transferring learning in the experimental group from the human wheel jump to the Arab jump, and this is consistent with many opinions of experts and specialists in the field of motor learning, who confirmed that transfer of learning is the learner's ability to respond to the performance of a certain skill as a result

of learning or training on a previous skill similar in terms of its path and performance to another skill, as (WagihMahjoub 2000) confirmed "the constant changes that occur in the learner's behavior when acquiring skills will be transferred and become experiences for acquiring other skills, and this is what calls for saying that we learn in order to transfer the effects of what we have learned to new experiences" (Mahjoub: 2000: 39), as the educational program prepared by the researcher had a major role in transferring learning, mastery, and consolidation of the human wheel jump as a result of the various exercises in the educational unit and the variables related to performance (such as distance, angles, speed, etc.), as the researcher focused during the method on the similarities between this jump and the Arab jump to which the effect of learning was intended to be transferred, in addition to the presence of common elements between the two jumps, learning one of them led to learning The sample members in both groups had never learned the other two before. Mustafa Fahmy (19 1984) reminds out that "whenever there are common factors between one subject and another, the more effective training or practice in one of them is on the speed of learning the other." Fahmy (1984: 110) This improves the player's execution of the technique. The player's performance in this talent improves when they swing their arms after leaving the ground because it increases their kinetic energy and angular momentum (Kamel, Farhan, Abdulredha: 2020: 1136). The technical performance of the Arab leap and the human wheel jump is very similar in terms of stimulus and response. This gives us a crucial and essential prerequisite for the transfer of learning effects. According to the similarity theory, "experiments have shown that when a person learns to perform a specific response in relation to the stimulus, he tends to perform the same response to a similar stimulus" (Youssef: 2004: 24). This theory explains why the stimulus is similar to the individual. According to Ya'rabKhayoun (2000), transfer takes place (QSGOOD). The strength of the transition and its benefits are related to the degree of similarity between the variables of responses. A transition will be more successful if the variables or responses between two acts or situations are more similar. Khayoun (2002), p. 112.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

- The sequential method proved effective in improving learning of the human wheel skill compared to traditional methods, by organizing movements according to a logical sequence that matches students' abilities.
- The application of the sequential method enhanced the transfer of learning from the human wheel skill to the Arab jump skill, due to the similarity in motor components.
- Students who learned using the sequential method demonstrated a higher level of confidence and motor coordination when performing both skills.
- The use of gradual progression in building technical skills contributed to reducing errors and improving the final performance of the skill components in gymnastics.
- The results showed that the sequential method is an appropriate educational method for the university level, especially for complex skills with a sequential motor nature.

Recommendations:

- Adopt the sequential method as a primary teaching method for teaching complex motor skills in gymnastics within the curricula of colleges of physical education and sports sciences.
- Integrate motor-related skills into the educational content and employ positive transfer of influence to accelerate the learning process.
- Training gymnastics teachers and coaches to design sequential educational programs that take into account students' levels and physical and motor needs.
- Applying the sequential method to other skills in individual sports and gymnastics and verifying its effectiveness.
- Conducting future studies to demonstrate the impact of individual differences (gender, age, fitness level) on the effectiveness of the sequential method.

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