THE EFFECT OF COMPETITIVE TRAINING ON TRANSITIONAL SPEED AND HANDLING ACCURACY IN HANDBALL FOR STUDENTS

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ABSTRACT

Background. The researcher attributes the reason for this decrease to the teacher's neglect of competitive training and the focus on using regular training, which led to the students feeling bored, distressed, and lacking motivation and desire to accomplish the tasks assigned to them during the educational units. **Objectives.** The research aimed to develop competitive training programs for students' transitional speed and handling accuracy in handball, as well as to identify the impact of these competitive training programs on students' transitional speed and handling accuracy. **Method.** The researcher followed an experimental approach using a pre-/post-test design with two equivalent groups, The sample consisted of (30) students representing fourth-year students in the Department of Physical Education and Sports Sciences at Dijlah Private College for the academic year (2025-2026). The researcher conducted the homogenization process for the research sample and performed the equivalence process for the two groups in the dependent variables (transitional speed and accuracy of handling from head level) based on the pre-measurements, The competitive training was then applied to the experimental group for (4) weeks at a rate of (2) units per week. After that, post-tests were conducted, in which the researcher ensured that they were conducted under the same conditions and circumstances as the pre-tests. **Results.** The results were then analyzed using appropriate statistical methods, and based on these results; the researcher concluded that competitive training plays a significant role in improving students' transitional speed and overhead ball handling accuracy with handball. Furthermore, the experimental group demonstrated a clear and substantial superiority in post-test measurements over the control group in both transitional speed and overhead ball handling accuracy with handball. **Conclusion.** The experimental group showed a significant and clear superiority in the dimensional measurements over the control group in the transitional speed and accuracy of handling from head level with the handball.

Keywords; competitive training, speed transition, accuracy, handling.

A. INTRODUCTION

Sports training is fundamentally an educational process grounded in scientific research and established principles. Its main objective is to prepare athletes so they can reach their peak performance in a chosen sport or discipline. Moreover, sports training is the core of the process of preparing the athlete, as it is the special educational physical process based on preparing the player physically by using different exercises to develop the various physical abilities necessary for the player to meet the requirements of the game being practiced and to achieve the highest skill level in it.

Competitive training is considered an important and effective way to enhance mental abilities due to the numerous and varied situations in which the player participates. Its use in training sessions is essential because it involves competition and movement, as well as providing excitement and suspense, which contributes to accelerating the acquisition and raising the players' physical, technical, and tactical levels. (11:149).

Handball is a sport that requires a high level of physical fitness (strength, speed, and endurance) and is linked to skillful performance based on sequential muscular action of a dynamic nature. It also depends on an important element of physical fitness, especially speed, as the player moves from his team's court to the opponent's court at maximum speed, accompanied by the skill represented by the various types of passing, dribbling, and other skills. Therefore, speed is one of the important elements of physical fitness that has an effective impact on skillful performance that must be available to the handball player. Through it, all skills are performed in the ideal and rapid way that has distinguished modern handball. Therefore, the teacher or coach must commit to and focus well on it and develop it in all its forms, as it plays a positive role in developing the handball player and thus the ability to keep up with the demands of the game, which is characterized by fast play, a high level of performance, more movement in open spaces, and the speed of moving to the opponent's goal in a few seconds. Transitional speed, whether with or without the ball, plays an important role in making a difference in the match or game.

Based on this, the importance of the research was to raise the physical level of students in terms of training in transitional speed based on the principle of competition with quality in the accuracy of head handling in handball to enable students to achieve the best physical and skill performance in handball.

Research Issue

Through the researcher's observation and follow-up of the practical lectures for the handball course, she noticed a decrease in the amount of physical and skill performance among fourth-year students in the Department of Physical Education - Dijlah Private College, especially in transitional speed and passing accuracy. The researcher attributes the reason for this decrease to the teacher's neglect of competitive training and the focus on using regular training, which led to the students feeling bored, distressed, and lacking motivation and desire to accomplish the tasks assigned to them during the educational units. This prompted the researcher to delve into this problem and answer the following question: What is the effect of competitive training on transitional speed and passing accuracy in handball for fourth-year students in the Department of Physical Education - Dijlah Private College?

Research objective

1. Preparing competitive training exercises for speed transfer and accuracy of handball handling for students.
2. Identifying the impact of competitive training on the speed of transition and accuracy of handball handling for students.

B. METHOD

To align with the requirements of the study, the researcher adopted an experimental approach, creating two comparable groups and conducting assessments both before and after the intervention.

Research Sample

The researcher identified the research population as fourth-year students in the Department of Physical Education and Sports Sciences - Dijlah Private College for the academic year (2024-2025), totaling (85) students. The research sample was chosen randomly, consisting of (30) students, who were divided equally into two groups: a control group and an experimental group, with (15) students in each group. To determine the characteristics of the sample, the researcher used statistical methods represented by the arithmetic mean, standard deviation, mode, and skewness coefficient for morphological measurements, as shown in Table (1).

Table 1. It shows the specifications of the sample in variables: : (chronological age, length, and mass)

No.	Variables	Mean	Standard Deviation	Loom	Torsion Coefficient
1	age/year	21.41	0.64	22	-0.93
2	length/cm	174.2	4.76	171	0.70
3	MASS/KG	73.74	4.28	7 2	0.41

The results in Table (1) show that the calculated skewness coefficient values were less than (+1), This suggests that the participants were fairly similar in terms of these key characteristics.

Selection of Assessment Tools

Following a careful review of related literature, academic sources, and earlier research, the researcher selected two tests transfer speed and handling accuracy.

1. Transitional speed test. (7:48)

- The goal of Test: Measurement of translational speed.
- Tools used: A paved running track (30) meters long, with two lines drawn (10) meters apart, one for the start and the other for the finish. A (20) meter gap is left after the finish line, a stopwatch, and a whistle.

a. Sprint Running Test

- Equipment needed: A marked track with a clear start and finish line, a stopwatch, and a whistle.
- How the test is performed: The participant stands behind the starting line in a standing start position. When they hear the referee's signal, they run in a straight line as fast as possible until they cross the finish line.

- Testing conditions: Participants must run in a straight line without deviating from their lane.
- Low-cut trainers or studded shoes are not allowed; standard athletic footwear must be worn.
- Two participants may perform the test at the same time, as the competitive element can help improve performance.
- Each participant is given three attempts, with adequate rest time between runs. Only the fastest time is recorded.
- Recording results: The participant's best time from the three attempts is recorded to the nearest tenth of a second (0.1s).
- Unit of measurement: Seconds and tenths of a second.

b. Handball Handling Accuracy Test (Reference: 2:507)

- Test name: 30-second wall-passing test from 3 metres distance, targeting an oval shape drawn at head height.
- Purpose: To assess a player's accuracy and control when passing a handball from head level.
- Equipment needed: A flat wall with a clearly marked oval target, one regulation handball, a measuring tape, a stopwatch, and adhesive tape for marking positions.
- How the test is performed: The participant stands on a marked line 3 metres away from the wall. On the signal "Start," they repeatedly pass the ball against the oval target from head height, aiming to hit the marked area as many times as possible within 30 seconds.
- Scoring: The total number of successful passes is recorded.

Main Procedures

1. Pilot Testing

Before the main data collection, a pilot test was carried out with ten students at 10:00 a.m. on September 29, 2025. The session took place in the indoor sports hall at the Department of Physical Education and Sports Sciences, Dijlah Private College. The pilot study aimed to:

- Confirm that the tests were appropriate for the target participants
- Estimate the time required to administer each test
- Identify any potential logistical or procedural challenges
- Verify the scientific foundation of the testing instruments

2. Scientific Evaluation of the Tests

- Validity: Face validity was used to evaluate both the transition speed and handball handling accuracy tests. The instruments were reviewed by a panel of experts in sports training and handball. Based on their feedback, the level of expert agreement was calculated and is presented in Table 2.
- Reliability: The test-retest method was applied to a separate group of ten students to measure consistency. The tests were first administered on September 29, 2025, and repeated exactly seven days later on October 6, 2025. Pearson’s correlation

coefficient was then calculated, and the results confirmed a high level of reliability for both tests (see Table 2).

- Objectivity: To ensure scoring consistency, two independent evaluators assessed the transition speed test. Their scores were compared using Pearson's correlation coefficient to confirm inter-rater reliability. as the results showed that the test had a high objectivity coefficient, as shown in Table (2). While testing accuracy the head-level ball handling test is considered one of the most objective tests, as it has specific grades and instructions and no two people disagree on it.

Table 2. The values of the validity, reliability, and objectivity coefficients for the test of transfer speed and handling accuracy are shown. From head level with a handball

No.	Tests	Validity	Reliability	Objectivity
1	Transitional speed/second	100%	0.92	0.90
2	Handling accuracy from head level / number	100%	0.93	-

3. Pre-test measurements: The researcher conducted pre -test measurements of transfer speed and overhead ball handling accuracy for both the control and experimental groups at 10:00 AM. On Thursday, October 9, 2025, in the indoor sports hall in the Department of Physical Education and Sports Sciences, Dijlah Private College, and in the presence of the support staff.

4. Equivalence of the two groups: In order to start with one starting line, the researcher carried out the process of equivalence between the control and experimental groups based on the results of the pre-measurements of the transitional speed and accuracy of handling from head level with the handball, as shown in Table (3)

Table 3. Of (t) in the pre-tests for the transfer speed and handling accuracy test from head level with a handball is shown between the experimental and control groups.

No.	Tests	control		Experimental		T value	Sig.
		M.	St.d	M.	St.d		
1	Transitional speed/second	5.625	0.213	5.531	0.218	1.06	Insig.
2	Handling accuracy from head level/number	19.42	2.38	18.72	2.46	1.49	Insig.

As shown in Table 3, the pre-test results for the head-level handball transfer test (measuring speed and accuracy) revealed no statistically significant differences between the experimental and control groups. The calculated t-value fell below the critical threshold of 2.05 (with 28 degrees of freedom at the 0.05 significance level), confirming that both groups were statistically equivalent at the start of the study. This indicates their equivalence.

1. Training Application Competitiveness: The training content was implemented. Competitive preparedness the members of the experimental group were treated as follows:
   a. The competitive training sessions began on 12/10/2025.
   b. Total duration (4) weeks.

c. Number of educational units Two units per week (2)
d. The total number of educational units is (8) units.
e. The duration of the learning unit is (90) minutes.
f. Training time the competitive aspect of the educational unit is (30) minutes.
g. The competitive training exercises were completed on 4/11/2025.
h. The researcher adopted several principles for developing the training. The competitive aspect is:
   - Focus on performing general and specific warm-up exercises at the beginning of the educational unit.
   - The suitability of the selected exercises in the educational unit with the abilities of the members of the experimental group.
   - Ensuring the availability of variety and excitement in speed and skill training.
   - Gradual from easy to difficult, in accordance with the students' physical and skill abilities.
i. The control group followed the method used by the subject instructor.

2. Post-test measurements: The researcher conducted post-test measurements of transfer speed and handling accuracy from head level with the handball for both the control and experimental groups at 10:00 AM. For Thursday, November 6, 2024, in the indoor sports hall in the Department of Physical Education and Sports Sciences, Dijlah Private College.

Statistical methods: The researcher adopted the following statistical methods: (9:202).
1. The arithmetic mean.
2. Standard deviation.
3. The mode.
4. Simple correlation coefficient.
5. The (t) test for similar samples.
6. Independent Samples (t) Test.
7. Presenting, analyzing, and discussing the results:
   - Displaying Measurement Results Pre- and post - tests of the speed and accuracy of overhead handling with a handball for the control and experimental groups, their analysis and discussion:
     a. Displaying Measurement Results Pre- and post - tests of the speed and accuracy of overhead handball handling for the control group, analysis and discussion:

C. RESULTS

Table 4. It shows the calculated value of t between the pre- and post-tests for the transfer speed and handling accuracy test. From head level with the handball of the control group.

No.	Tests	Pre-measurement		Post measurement		T value	Sig.
		M.	St.d	M.	St.d		
1	Transitional speed/second	5.625	0.213	4.423	0.201	3.38	Sig.
2	Handling accuracy from head level/number	19.42	2.38	21.85	2.17	3.92	Sig.

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The results in Table (4) show that, the calculated (t) value score for the test of transitional speed and accuracy of handling from head level with a handball for the control group came in greater than its tabulated value of (2.14) at a significance level of (0.05) and degrees of freedom of (14). Which indicates the existence of significant differences between the pre- and post-measurements in favor of the post-measurements. The researcher attributes the reason for the significant differences to the effectiveness of the handball-training units' demonstrated adequacy in terms of allocated time, organization, and implementation, tailored to the abilities of the students in this group. Furthermore; the method employed by the subject teacher proved effective, as it included a set of carefully selected and prepared physical and skill-based exercises based on scientific principles, that accordance with the nature physical ability and accuracy of handball handling skills. As well as the nature of the sample, and this is consistent with what was indicated in that, "learning does not occur merely by repeating movements and sports skills by learners, but rather training must be based on standardized scientific foundations to advance the level of their abilities and skills towards the better." (6:30).

The commitment of the students of this group and their regularity in the educational units, helped them to progress in these two variables in a good way, through practice and repetition and avoiding mistakes under the guidance of the teacher, and this in itself is one of the main steps followed in learning and training motor skills and physical abilities.

b. Displaying Measurement Results Pre- and post - tests of the speed and accuracy of overhead handling with a handball for the experimental group, their analysis and discussion:

Table 5. It shows the calculated value oft between the pre- and post-tests for the transfer speed and handling accuracy test. Head level handball for the experimental group

No.	Tests	Pre-measurement		Post measurement		T value	Sig.
		M.	St.d	M.	St.d		
1	Transitional speed/second	5.531	0.218	3.412	0.182	4.89	Sig.
2	Handling accuracy from head level/number	18.72	2.46	25.24	1.69	6.72	Sig.

As presented in Table 5, the experimental group showed statistically significant improvement on the head-level handball handling test (assessing transitional speed and accuracy) from pre-test to post-test. The calculated t-value exceeded the critical threshold of 2.14 (freedom degree = 14, $p < 0.05$), with post-test performance markedly outperforming baseline scores. The researcher attributes this gain to the competitive training protocol implemented with the experimental group, suggesting that the structured, game-based practice effectively enhanced players' technical execution under time pressure. This training effectively contributed to developing the students' speed and accuracy in overhead handling through their active participation. The training was geared towards realistic play through frequent decision -making in competitive situations. This motivated the students to perform

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the handling, and the competitive training provided a realistic and similar picture of what happens in the game, especially in handball, with all students participating in carrying out various tasks and facing many situations that occur in performance. This is consistent with what was indicated in that "competitive training represents a fundamental means of developing players' condition in the preparation stages. The different conditions create a positive interaction between the player, and the varying training conditions are reflected in the behavior and performance on the field of play. This allows the coach to clearly identify the level of physical, technical, and psychological condition of the players. Competition represents the highest stage in the structure of sports activity, as it allows everyone to identify aspects of strength and weakness in terms of physical, technical, and tactical aspects compared to regular training."(432:3)

c. Displaying Measurement Results Post- test results for transfer speed and handling accuracy from head level with a handball between the control and experimental groups, and their analysis:

Table 6. Calculated value (t) is shown in the dimensional measurements of the transfer speed and handling accuracy test From head level with a handball between the two experimental and control groups

No.	Tests	Control		Experimental		value of (t)	Sig.
		M.	St.d	M.	St.d		
1	Transitional speed/second	4.423	0.201	3.412	0,182	5.86	Sig.
2	Handling accuracy from head level/number	21.85	2.17	25.24	1.69	5.49	Sig.

As shown in Table 6, post-test comparisons between the experimental and control groups on the transitional speed and overhead handball accuracy tests revealed a statistically significant advantage for the experimental group. The calculated t-value exceeded the critical threshold of 2.05 (freedom degree = 28, $p < 0.05$), confirming that the competitive training intervention produced measurable gains.

The researcher attributes this improvement to the design of the training protocol, which incorporated game-like speed and handling drills performed under competitive conditions. By mirroring in-game scenarios—particularly those requiring rapid transitions and precise head-level ball handling—the drills not only sharpened technical execution but also heightened student motivation, engagement, and peer-driven competition. This aligns with established literature suggesting that competitive training fosters perseverance, effort, and excitement while strengthening sport-specific musculature and cultivating the mental resilience essential for athletic performance. As noted in the source material, when competitive elements are intentionally linked to the demands of actual competition, they become a powerful tool for developing the physical, technical, and psychological qualities central to player development. (1:417)

The researcher also attributes the significant differences between the control and experimental groups to the fact that the nature of handball requires that the performance be characterized by transitional speed to increase the student's ability to perform short and fast distances during the performance, and thus the nature of his steps varies from walking to running quickly. Therefore, transitional speed is one of the most important physical

requirements that students should pay attention to during handball educational units. This is what the competitive training followed by the experimental group worked on. This is consistent with what was indicated that transitional speed is "the athlete's efficiency in performing similar successive movements in the shortest possible time by moving using the greatest possible force and speed. The highest speed is related to the greatest frequency of movement and gaining a distance between the flow of two successive movements, i.e., performing a certain distance in the shortest possible time." (4:182).

The researcher also attributes the significant differences in transfer speed and accuracy of overhead handball in favor of the experimental group to the use of competitive training. This training effectively contributed to developing the students' level in these two variables through active participation, as the competitive training moved towards realistic play by requiring frequent decision-making in competitive situations. He worked to motivate students to perform, Competitive training also provided a realistic picture, similar to what happens in play, and the participation of all students in carrying out various physical and skill-based tasks and facing many situations that occur to them. This is consistent with what was mentioned in that "competitive training represents an essential means of developing the condition of players in the different stages of preparation, as it creates a positive state of interaction between players." (5:342).

The researcher also sees that Competitive drills have effectively helped improve transition speed due to the numerous different situations in which students participate. Therefore, their use in the learning unit is essential, as these drills promote competition and movement, in addition to providing excitement and suspense, which contributes to increasing the speed of acquisition. In addition, the high level of physical and skill of the students.

D. CONCLUSION AND RECOMMENDATIONS

Conclusions

1. Competitive training plays a major role in improving transition speed and accuracy of overhead handling with handball for the students.
2. The experimental group showed a significant and clear superiority in the dimensional measurements over the control group in the transitional speed and accuracy of handling from head level with the handball.
3. The control group showed a remarkable superiority in the post-test measurements over the pre-test measurements in transitional speed and accuracy of handling from head level with the handball.

Recommendations

1. The need to include competitive training during the handball education units for fourth-stage students to develop transitional speed and accuracy of head-to-head handling in handball.
2. Focusing on training physical and skill abilities in handball using competitive training.

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3. Handball teachers are interested in developing similar educational content to improve the level of physical and skill performance in handball.
4. Conducting studies of physical abilities and other skills in handball and in other team sports for both genders.

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F. AUTHOR CONTRIBUTION STATEMENT

All authors contributed to the manuscript of this research.

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