

The effect of qualitative exercises in developing motor compatibility and learning the skill of volleyball jump set

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ABSTRACT

This study aims to prepare and identify the effect of qualitative exercises in order to develop motor compatibility and learning the skill of jump set in volleyball. The present study had an experimental design. Specialized School in Al-Qadisiyah Governorate was identified as the research community for the current study. A total of 28 players were recruited as the participants for the present study. Participants were allocated into two groups, i.e. experimental group and the control group, by simple random allocation method (raffle). Based on the findings of the study, it was concluded that the qualitative exercises helped the players in developing motor compatibility, i.e. the motor coordination of the legs and arms of the experimental group, and also that the qualitative exercises helped in learning the technical performance of the jump set skill in volleyball for the experimental group. The researchers recommend to use qualitative exercises according to the level of learners in learning the jump set skill in volleyball.

KEYWORDS

Volleyball jump set; Volleyball setter; Motor compatibility.

1. INTRODUCTION

In the past decade, a lot of development has been observed in terms of techniques and skills of players in their respective games. This is due to the consistent work of sports authorities and researchers for creating a better learning environment by provision of training to the players using modern methods based on the scientific foundations. The physical education in sports is an essential area in the development of performance skills and preparing learners physically, and planning and

helping them to communicate with society across the world in a healthy way (Ávila & Chila, 2022; González et al, 2020; López et al, 2022; Nicolás et al, 2020; Sánchez et al, 2019).

The academic unit forms an essential base in the curriculum of a sports organization (Hassanein, 1995). It helps the players to learn basic kinetic skills which is the basic need to play any sport. But simultaneously, trainers or teachers have to work with respect to the rules and regulations of the sports association. Hence, a trainer must think about the content to be included in the educational curriculum taking into account the specific objectives and characteristics of the learners. It may help in determining the appropriate and practical approach to the success of the educational procedure. The more successful the teacher is in choosing the optimal educational method, the more successful the learning process will lead to positive results (Al-Hakim, 2004). Quality educational exercises take into account the needs and requirements of all the learners, when scheming the academic unit. Through these exercises, teacher or trainer try to avoid all problems that may prevent any learner from learning effectively while keeping the high level of educational curriculum requirements (Farag, 1995).

Most of the learners face slowness and difficulty in learning motor skills, especially the jump set skill, since it requires high motor coordination in terms of accuracy, fluidity and proper timing. This might be due to lack of use of appropriate set of exercises in their training schedule prepared by the trainers. Hence the present study was conducted to formulate a set of qualitative exercises and to identify the effect of qualitative exercises in order to develop motor compatibility and in learning the skill of jump set in volleyball for the players of the Specific School.

The primary aim of the present study was to formulate a set of qualitative exercises in developing motor coordination and learning the jump set skill in volleyball for the players of the specialized school. The hypothesis was that there would be a significant effect of qualitative exercises in developing the motor compatibility and in learning the skill of jump set in volleyball for the players of the specialized school.

2. METHODS

2.1. Design and participants

The present study had an experimental design. The present study was conducted on the volleyball players of the Specialized School in Al-Qadisiyah Governorate in the indoor sports hall in Al-Diwaniyah within the time frame of June 2021 to September 2021. A total of 28 players were

recruited as the participants for the present study. Participants were allocated into two groups, i.e. experimental group and control group, by simple random allocation method (raffle) (Al-Heila, 1999).

2.2. Equivalence of the two groups

Before implementing the specific exercises, the researchers verified and established the equivalence of the two groups with respect to the variables related to the motor and skill abilities tests (motor compatibility, technical performance of the jump set skill in volleyball) used in the present study, as described in the Table 1.

Table 1. The equivalence of the two research groups in the motor and skill abilities tests (compatibility, jump set skill in volleyball)

Variables	(U)	Control group		Experimental group		T calculated	Level	Type
		Mean.	Standard deviation	Mean.	Standard deviation			
Compatibility between the eyes and the legs	Sec.	11.12	0.63	10.98	0.26	0.11	0.916	Non-sig
Eye and arm compatibility	Deg.	9.87	0.93	9.55	0.75	0.21	0.839	Non-sig
The technical performance of the skill of jump set in volleyball	Deg.	4.80	0.44	4.78	0.31	0.16	0.876	Non-sig

Table 1 describes the rate of the test significance level (sig), which was found to be more than 0.05 for all the variables taken into consideration for the present study. Hence, both groups were found to be equivalent.

2.3. Instruments

In the present study, many tools and devices were used for the purpose of data collection with the aim to achieve the objectives of the research. Different instruments were used in the present study, including Mikasa volleyball balls (10), measuring tape (20 meters), ten coloured plastic cones, sports stopwatch, whistle, stationery (papers and pens), two Canon cameras with supports, Lenovo laptop calculator and six tennis balls.

2.4. Procedures

2.4.1. Eye-foot coordination test

Kinematic compatibility test was intended to measure the kinetic coordination between the eyes and the legs (Hassanein, 1995). The tool required for the measurement of this test was a stopwatch. Prior to the start of the test, eight circles were drawn on the ground, each with a diameter of 60 cm as shown in Figure 1. Each participant was asked to stand inside a circle. At the sound of start, participants were asked to jump with both the feet from one circle to another until they reach in the eighth circle. The measurement is taken by recording the time taken by participants in completion of the whole test.

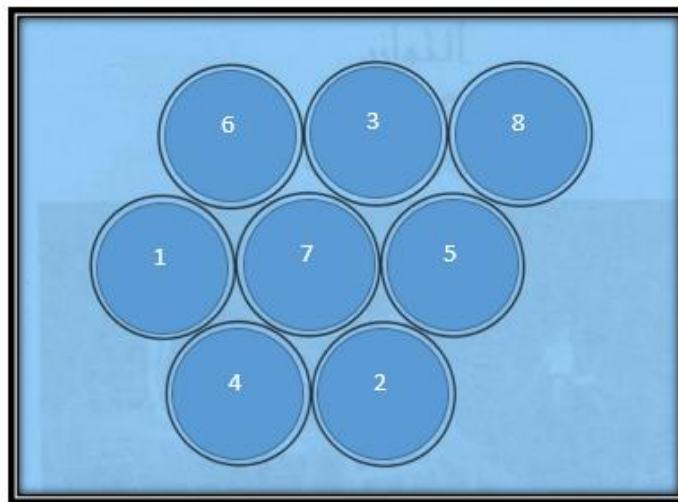


Figure 1. The numbered circles test illustrates the eye-foot coordination

2.4.2. Eye-hand coordination test

This test was intended to measure the kinetic compatibility between the eye and the hand (Al-Hakim, 2004). The tool required for the measurement of this test was a tennis ball. The participant was asked to stand in front of the wall and behind the line drawn on the ground. Followed by which, participant was first asked to throw the tennis ball five times in succession with the right hand, and try to receive the ball after it bounces from the wall with the same hand. After this, participant was directed to throw the tennis ball five times in succession with the left hand, and try to receive the ball after it bounces from the wall with the same hand. At last, participant was asked to throw the tennis ball five times in succession with the right hand, and try to receive it after it bounces from the wall with the left hand. Scoring was done by giving one point for every correct attempt successfully made by the player. Total points were given out of 15.



Figure 2. The test of throwing and receiving the ball against the wall to measure eye-hand coordination

2.4.3. Technical performance evaluation test for jump set in volleyball (Al-Heila, 1999)

The researchers conducted a preliminary experiment to test the kinetic compatibility and technical performance of the jump set skill. The preliminary experiment was conducted on 10 volleyball players, selected as sample for the pilot trial. This experiment was conducted in the month of June 2021. The preliminary experiment was conducted with the aim to verify the validity of the tools used in terms of positive assistance, to verify the fitness of the tests for the tester members and the ease of their application, to know the time required to conduct the tests, to verify the understanding and efficiency of the assistant work team in conducting measurements and tests and recording the results, to know the difficulties that the researcher may encounter during the course of the study and providing appropriate solutions to them.

2.4.4. Main Experiment

Pre-test: The research team conducted the initial -tests on the research community players, selected as the participants for the study for the study variables i.e. the technical performance of the jump set skill and motor compatibility. The initial testing was done in the month of June 2021. Two cameras were used to photograph the technical performance of the preparation skill. Video recording was also done via CD to be presented to the residents for the purpose of analysis.

Application of qualitative exercises vocabulary: Based on the expertise in the volleyball game, a set of qualitative exercises was formulated. Participants of experimental group performed the qualitative exercises which helped the learner in raising the level of his skill and motor abilities.

These exercises were appropriate for the learners' ages and features in terms of their skills and preceding experiences. A total of 8 training sessions were given i.e. three sessions per week for total of four weeks. Each training session was completed in 60 minutes. Variable set of exercises were performed by the participants to prevent the state of boredom that may affect the experimental group.

Post-test: Post training sessions of qualitative exercises to the participants of experimental group final tests were accomplished by the researcher and teammates in the post-tests. The tests were conducted for the control and experimental groups in the month of January 2021 under the same conditions in which the pre-tests were conducted in terms of the sequence of the tests.

2.5. Statistical methods

In the present study, statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS). The statistical tests used were descriptive statistics (mean and standard deviation) and t test.

3. RESULTS AND DISCUSSION

In the present study, statistical analysis revealed significant difference between two groups in the initial and final measurements, indicating that these qualitative exercises helped in learning the skill of jump set in volleyball for the players of the Specific School. The Qualitative exercises formulated for the players were complex, diverse and a set of multiple exercises based on the specific needs and characteristics of the players required for the game. For learners, "when the exercises are implemented effectively, the learners' performance improves and thus enables them to gain a new benefit" (Frag, 1995).

The researchers also focused on the complexity of the exercises, use of multiple tools to vary the pattern and mode of exercise, which helped in building the interest and increased the active participation of the players during the exercise session. They also focused on the individual training and training in a group for each player. The researchers believed that the increased number of repetition along with the correct technique helped the learners to master the skills by refinement in the motor performance. The development of compatibility among students also contributed in developing the skill of preparation. Carrying out the preparation process requires high compatibility, fluidity, agility and flexibility of movement. This is confirmed by (Aline Wadih Frag), as "the development of physical and motor abilities enables the learner to perform the motor performance of the skill in the best possible way" (Khayoun, 2002).

Statistical analysis showed significant difference between two groups, as described in the Table 4, which indicated positive impact of specific qualitative exercises among players of the experimental group. The Skill of the Jump Set is a specific skill, which is different from other skills of the game. It requires a set of physical and motor abilities. The significant differences can be attributed to the fact that, qualitative exercises included a group of complex movements, which contributed to motor compatibility. The development of motor abilities enabled the learner to perform the skills in the best possible way. Without it, the learner cannot perform this skill, whether by jumping or standing, changing direction at high speed and seeing the appropriate places to direct the balls well.

Table 2. The result for the two groups of the pre and post-tests

Variables	(U)	Initial		Post		T calculated	Level sig	Sig type
		Mean.	standard deviation	Mean.	standard deviation			
Compatibility between the eyes and the legs	Sec.	11.12	0.63	8.86	0.45	9.92	0.000	Sig
Eye and arm compatibility	Deg.	9.87	0.93	13.06	0.57	17.51	0.001	Sig
The technical performance of the skill of jump set in volleyball	Deg.	4.80	0.44	6.64	0.27	38.63	0.002	Sig

Table 3. The results for kinetic compatibility and the technical performance of the skill of jump set in volleyball

Variables	(U)	Initial		Post		T calculated	Level sig	Sig type
		Mean.	standard deviation	Mean.	standard deviation			
Compatibility between the eyes and the legs	Sec.	10.98	0.26	9.60	0.50	3.08	0,008	Sig
Eye and arm compatibility	Deg.	9.55	0.75	11.25	0.77	6.07	0.000	Sig
The technical performance of the skill of jump set in volleyball	Deg.	4.78	0.31	7.81	0.46	14.78	0.000	Sig

Table 4. The result for the control and experimental groups for kinetic compatibility and technical performance of the jump set skill in volleyball

Variables	(U)	Control		Experimental		T calculated	Level sig	Sig type
		Mean	Std. deviation	Mean	Std. deviation			
Compatibility between the eyes and the legs	Sec	8.86	0.45	9.60	0.50	4.31	0.000	Sig
Eye and arm compatibility	Deg.	13.06	0.57	11.25	0.77	7.52	0.000	Sig
The technical performance of the skill of jump set in volleyball	Deg.	6.64	0.27	7.81	0.46	8.69	0.000	Sig

4. CONCLUSIONS AND FUTURE RECOMMENDATIONS

Based on the findings of the present study, the authors concluded that the qualitative exercises helped to develop the motor coordination of the legs and arms in the participants of the experimental group. The qualitative exercises also helped in learning the technical performance of the jump set skill in volleyball for the experimental group. This positively reflected the development of motor compatibility on the learning of the jump set skill in volleyball players.

According to the set of conclusions adopted and formulated by the researcher from the results obtained in this experiment, some recommendations were made by the researcher. The authors recommend that trainers pay attention to the use of qualitative exercises according to the level of students in learning the skill of jump set in volleyball. Training coaches must pay attention to qualitative exercises according to the learners' capabilities in developing compatibility and kinetic flexibility.

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AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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