

The Effect of Comparative Training on the Achievement and Trajectory among Young Weightlifters

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Abstract

This study aimed at identifying the comparative training and its effect on the trajectory and achievement among young weightlifters. It employed the experimental approach to verify research hypotheses. The research sample consisted of (24) players representing the Iskan Youth Club in Iraq and the Iranian Shomal Club. The players were randomly divided into two groups (experimental and control). They underwent the processes of homogeneity and equality with their pre-measurements including height, age and the relative achievement of the snatch. The coach method was adapted with introducing training units corresponding to their counterpart Iranian Shomal Club. The data was processed statistically. The results revealed that the comparative training helps to shorten the duration of training because of its specificity by matching the variables of the two samples.

Keywords: comparative training, trajectory, weightlifting

Introduction

The idea of this training lies in imitating a training experience from a club or a high-level coach and conducting it under the same training conditions, provided that the players must have the same physical and skill abilities¹. Applying such training to players can lead to reducing the training work and effort and avoiding the training mistakes. The standardized training approaches implemented regularly produce a rapid and organized improvement in the functional, physical and skilled efficiency of the athlete and achieve the objectives of the training process. However, the existing literature has identified and analyzed barbell trajectory in detail, showing the differences among good movements at converging levels.⁽¹⁾ These studies revealed the ideal values of barbell trajectory and gave relatively³ different ranges to help us in two directions. The first direction is to correct movements according to their form and how they are performed. While the second one is to shortening the time and effort of training. Hence, research significance lies in the use of comparative training (imitating the training environment) in correcting the training process and adjusting trajectory and performance to reach the optimal achievement. It is observed that the sports

training environments can be transmitted (with their specificity) through comparative training theory, saving effort and time on coaches and training institutions.⁽²⁾

Practical procedures

Research Sample

The research sample consisted of (24) young weightlifters selected deliberately from sports clubs of Iskan in Diwaniyah and the Iranian Shomal club, represented by (12) players for each sports club. The players were divided on the basis of the homogeneity and equality of the two samples from different clubs, which is a requirement of the comparative training theory. The research variables were established for trajectory (heights and deviations) and achievement (the clean and jerk), and they were experimented at the stage of the special preparation of the two teams. The players were treated with homogeneity and equality and according to their weight categories. Each group included several weight categories as follows: 56 kg (2 players), 62 kg (4 players), 69 kg (4 players), and 85 kg (2 players). The two samples.

The Comparative Training Theory (Imitating the Training Environment)

1. The Scientific Interpretation of Theory

The principles of comparative training is simulate the training environment in a palace to be suable the another place and environment. Technically, transfer the high level training to enhance the specific training

model. (Goodwin, 2005). Characteristics of scientific theory as follows:

1. It is easy to obtain assertions or proofs for almost all theories if we anticipate these assertions.
2. Any “good” scientific theory prohibits certain things from happening, and the more things that the theory prohibits, this would be better.

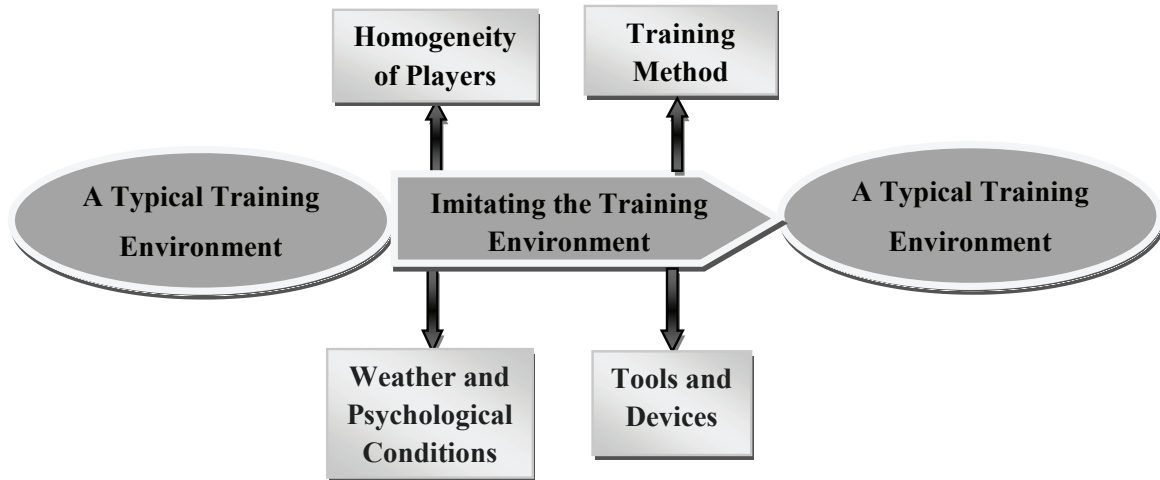


Figure 1 illustrates the components of imitating the training environment theory (comparative training)

2. Video Recording

camera with speed of (100) images per second was placed at the right side of the weightlifter and at a distance (5 m) and height (85 cm). The aim behind using video record (lateral) was to:

- Extract the variables of trajectory to benefit from their results in defining and diagnosing the errors and match the process reached by the players of imitating the trajectory from the other team according to the comparative training method.

- motion analysis.

Main Experiment

Pre-Test

Pre-tests were conducted for the research sample in the Championship of Diwaniyah Sports Clubs in the closed hall of the Iskan club on Saturday, 13/7/2019 at 4

p.m. with the help of the staff. The achievement test was conducted for the snatch with video recording to record data of the sample regarding the measurement of height, age and the relative achievement.

Training Method

The training method of Shomal Club coach was employed in the special training period. After homogenizing the research sample, the method was applied in parallel within the training period of the two research groups for 6 weeks and within the following limits:

1. The time of one training unit ranged from (80-100) minutes, (4) units per week.
2. The implementation of the training method began from July 13, 2019 to August 12, 2019.
3. The first week of method (i.e., the first and second units) was an explanation provided by the coach

about the actual performance of the training units and their application in accordance with the other team.

4. The researchers work was limited to supervising the course of the method in the control and experimental groups as well as to follow up the training stages.

Post-Test

After completing the application of items of the training method, post-test was applied to the experimental group on Saturday, 12/8/ 2019 at the annual weightlifting championship to test the achievement. The evaluation data were taken from the referees of championship and

video recording was utilized for the purpose of motion analysis.

Statistical means

The researchers used the Statistical Package for Social Sciences (SPSS)

Results and Discussion

Results of the Pre- and Post-Tests of the Relative Achievement (the Snatch)

Table 1:

Variables		Pre-test		Post-test		(t) value	Significant	Significant type
		Mean	STD.EV.	Mean	STD.EV.			
Experimental	The snatch	1.22	1.21	1.80	1.02	3.14	0.000	Significant
Control	The snatch	1.12	1.17	1.88	1.06	4.10	0.000	Significant

The training method reflected positively in the digital achievement of the research sample. The opinions of experts, regardless of their different scientific and practical culture, the observation of the necessary individual differences, as well as the use of optimal reiterations and the effective intermission period under the supervision of specialized coaches and under good training conditions in relation to space, time and tools used (Al-Tikriti & Al-Obaidi, 1999).⁽³⁾

The training method has achieved economic requirements in terms of movement only by targeting movement and not involving unwanted muscular groups during training. it is targeting performance directly, leading to the improvement of these groups towards serving their work in achieving high effectiveness. This is consistent increasing the level of muscles that are necessary for work and performance.⁽⁴⁾

Results of the Achievement in the Post-Test of the Two Groups (Control and Experimental)

Table 2:

Variables	Experimental group		Control group		T-value	Significant	Differences
	Mean	STD.EV.	Mean	STD.EV.			
The snatch	1.80	1.02	1.88	1.028	1.22	1.028	Non-significant

This proves that the two samples approached the same achievement, which verifies the theory of comparative training. This similarity in the achievement in the post-test of the two groups is attributed to the improvement of the experimental group in the technical performance (technique) as a result of the method that contributed to raising the physical and skill qualities of the players. Hence, finding the right and modern scientific methods of teaching the performance of good technique and then applying it is the basis in the improvement of weightlifter's technical ability in performing weightlifts with a good technique that inevitably leads to the improvement of achievement (Goodwin, 2005).⁽⁵⁾ The progress of achievement was equal between the experimental and control groups.⁽⁶⁾ This is attributed to

the transfer of the training environment and comparative training, which led to avoiding and fixing errors in the technical performance and providing the mechanical variables in favor of lifting. Among the reasons for the errors in the technical performance is the weightlifter's failure to apply the mechanical rules of the lift and failure to use the correction means⁽⁷⁾ So, the process of correcting errors leads the player to a higher level of achievement (Goodwin, 2005).⁽⁸⁾ Therefore, it can be concluded that comparative training has a great impact on the improvement of achievement level.⁽⁹⁾

Results of Bio kinematic Variables (Heights and Deviations) of the Snatch in the Pre- and Post-Tests for the Two Groups (Experimental and Control)

Table 3: results of heights

Group			H1	H2	H3	H4	H5	H6	H7	H8
Control	Pre-test	Mean	55.66	75.20	110.13	122.62	133.6	118.8	30.15	120
		STD.EV	2.34	4.90	2.94	3.5	1.30	1.73	3.54	1.83
	Post-test	Mean	60.36	80.52	109.62	121.33	130	116.6	25.34	119.43
		STD.EV	2.60	5.62	3.62	2.13	1.51	0.97	4.05	1.53
Experimental	Pre-test	Mean	56.33	73.11	113.113	122.3	135.1	119.80	29.64	121.6
		STD.EV	3.42	5.19	2.22	2.61	2.12	3.51	3.84	1.39
	Post-test	Mean	69.34	78.99	101.22	122	129.1	112.4	20.25	118.14
		STD.EV	3.55	4.12	2.19	2.51	2.10	2.10	3.71	1.63

(H1). This improvement is attributed to the use of the method and its effective exercises as well as the good extension of weightlifter during the first pull phase.⁽¹⁰⁾

(H2). This increase keeps the weight close to the body's center of gravity because this process leads to the acquisition of positive acceleration after the explosion process, which appeared in the second pull phase and for

reaching full extension mode (Ismail, 1996).⁽¹¹⁾ The best height was recorded by the experimental group in the two post-tests using the assistant tool, which contributed to the increase in the height of this point. This is a positive case achieved by the weightlifter during the weightlifting (Gondin et al., 2005).⁽¹²⁾

(H3), making an obvious improvement in the performance of both groups. This is attributed to the training method used which reduced the rate of that increase.⁽¹³⁾ So, the low level of this variable leads to an increase in the weightlifter's quick drop to the squat position. (H3) reduces the value of (D3) and this is a positive case. The experimental group that worked on comparative training recorded an improvement in this variable. (H4), its value in the pre-test was high, reflecting a negative aspect of performance for not employing the performance properly and thus attempting to lift the barbell from the static position. (H5), the decrease in the value of this variable is due to the apparent improvement of both groups influenced by the method. There was a decrease in the height level of weight as well as using this height of barbell to fall under it and not lifting the weight to an excessive height more than the appropriate one. The experimental group was economical at this height because it did not perform excessive heights.

(H6) This improvement is attributed to employing the performance correctly, disallowing the weightlifter to sit rapidly under the weight as well as reduced effort during

performance. The improvement of the experimental group was better than the control group in the post-test due to clearly employing the performance by learning it through comparison. This, in turn, contributed to the control of the trajectory. (H7), in the post-test, a clear decrease was observed in this height, indicating the effectiveness of the method. This decrease is to perform the phase of arms outspread and dropping well under the weight. The experimental group that worked on comparative training achieved the lowest percentage. Finally. (H8). This represents a negative indicator for the failure of the two groups to sit full in the squat position. However, there was a decrease in this height in the post-test due to the use of effective exercises in the training method and similarity of training between both groups. The experimental group was better than the control group for using the comparative training. This is attributed to the decrease in in the height of weight in the static point of the squat position, leading to the increase in the weightlifter's balance for the weight is close to the platform (Ismail, 1996). This means that the degree of stability of objects depends on the height of their platform.

Table 4: Results of deviations

Group			D1	D2	D3	D4	D5	D6
Control	Pre-test	Mean	3.62	4.97	9.63	12.26	19.15	16.72
		STD.EV	1.01	1.12	1.05	1.44	1.11	1.69
	Post-test	Mean	3.99	4.30	4.75	10.55	15.73	15.32
		STD.EV	1.41	0.83	2.54	1.63	1.26	1.13
Experimental	Pre-test	Mean	3.66	4.81	9.78	11.90	18.22	15.90
		STD.EV	1.12	1.32	1.52	1.71	1.04	0.91
	Post-test	Mean	4.80	4	3.53	9	12.99	12.44
		STD.EV	0.97	0.63	1.73	1.03	1.08	1.40

(D1) This progress is attributed to that in the two groups, the weightlifters pulls the bar as close as possible to their body. The good performance of the snatch is done by forming a trajectory where the weight deviation increases towards the weightlifter in the first pull phase (Ismail, 1996).

(D2), there was a clear improvement in the levels of the two groups due to the use of the training method. The increase in the weight deviation in the second pull phase away from the imaginary line of gravity leads to increase the moment arm and thus increases the torque through extending the arm. Therefore, additional force is required to control the weight and pull it backward. The experimental group, which imitated the training environment, recorded fewer ranges than the control group, which is a positive case. Hence, the good performance of the snatch lift consists of a trajectory where the weight deviation is reduced away from the weightlifter in the second pull phase (Al-Tikriti, 1985).

(D3), it is important for the snatch because if this distance increases, it may lead to push the center of gravity backward to be located near the rear edge of the platform (Al-Hashimi, 1988).

(D3) The improvement of the two groups is attributed to the training method and the use of the typical trajectory in training and movement control led to the approximation of this distance as much as possible to the imaginary gravitational line and thus the weightlifter's balance.

(D4) This improvement is attributed to that the weight is close to the gravitational line, which reduces the width of the snatching arc and makes the weight in a better balance state (Ismail, 1996). The two groups did not perform excessive curvature in order to increase balance (Al-Tikriti, 1993).

(D5) This led to bring the weight close to the imaginary line of gravity. The experimental group was the best in the post-test because of the effectiveness of imitating the training environment, which contributed to reducing the errors of this deviation and achieving better balance.

(D6) the small size of this arc helps to maintain balance because of the closeness of the center of gravity to the platform and thus achieve the best achievements (Ismail, 1996). This led to better learning and mastery of the curves that make up this arc and thus the weightlifter's balance and the good technical performance of the lift to achieve the best achievement.

Conclusions

- Comparative training has a positive effect on the achievement of the snatch.
- Comparative training has effect on the equality of the mechanical variables of trajectory of the snatch (heights and deviations) for both groups.
- Comparative training has led to reducing the time and effort of the training process.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Education for Women and all experiments were carried out in accordance with approved guidelines.

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