

Effect of Using Three Types of Training (Weight-Plyometric-Compound) for Developing Muscular Ability and the Level of Performingsome Defensive Skills in Handball

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Abstract: This research aims at putting three suggested trainings by using (weigh - Plyometric - compound) for the developing the muscle ability and comparing it's effect on the performing some defensive skills in handball, The researcher used the experimental method on a sample of (58) student divided into three groups, eight each and the most important results proud exceed, The third experimental groups which uses the compound training over the first experimental group which used weight training and over the second group which used plyometric in all muscles ability and the level of performing some defensive skills (defensive movements – The block).

Key words: Weight • Plyometric • Compound

INTRODUCTION

Weight trainings are trials to make the player reach the highest level in sports competition to get champion ships. The sportsman develops his muscular power by regular and sound training for weight lifting. if he doesn't follow the sound ways techniques in training he want achieve the expected results because weight training is considered one of the ideal ways to physical elements which give the muscular power and also improve and develop the performance in addition to the ability of using it in different types of sporting activities to facilitate the control of cormorants Clements [1].

The compound training is on of the main types for the sportsmen in which the weight plyometric training can be used in the same training unit [2]. The compound trainings, confirming this study, are the best trainings which are used as through then we can benefit from both weight training and plyometric trainings [3].

The muscular ability plays a vital role in most of sport activities because they have individual or team activities high jump motions and the rapid motions of legs and arms especially in handball, the importance of muscular ability appears in all its aspects and skills which depend greatly on the speed of performance suddenly which is described as the ability which distinguish the motions of handball players [4].

As preceded we can see that this research is just improving to the performance level of some defensives skills (the speed of defensive movements – the block) through developing of the muscle ability by specifying the best to effective training programs to achieve this target so the researcher sees that putting three programs in training the first by using weights the second by using the plyometric the third includes using both of then in one program (the compound training) and making a comparison between then to know the most suitable one of these training programs to raise the physical and technical level for the players in performing these skills in handball.

The research aims at putting three suggested training types by using (weights - plyometric - compound) to develop the muscle ability and comparing its effect on the level of performing some defensive skills in handball, through:

- The Effect of using the three training programs on the developing the muscular ability and the level of performing some defensive skills in handball.
- Knowing the differences between the three research groups in measuring the muscular ability and the level of the performance of some defensive skills in handball.

- Knowing the rate of improvement in the muscular ability and the level of performance some defensive skills in handball for the three research groups (weight - plyometric - compound). Skills in handball exceed the other groups' players.

MATERIALS AND METHODS

The researcher used the experimental method by using the experimental method by using the experimental design for three experimental groups following before and after measuring. The research sample was chosen by obligatory method of the fourth year, students in the Faculty of Physical Education Zagazig University they are specialists in handball and practitioners to handball in 2009/2010 they were 30 students, as representatives for the whole research society. 6 students were chosen to do survey studs so the whole sample for the research is 24 students to receive the suggested training and they were divided as following:

- The first experimental group: 8 students received the training program by weights.
 - The second experimental group: 8 students received Plyometric training program.
 - The third experimental group: 8 students received the compound training program.
- Pre- Measurements were used for the members of the research sample from 10/9 to 14/9/2009.

Applying the Training Programs: The training programs were applied on the members of the three experimental groups weight program of the first experimental group (role 4) plyometric program on the second experimental group (role 4) The compound program on third

experimental group (role 6) from 17/9 to 17/12/2009 about 8 weeks including 32 training units, 4 units weekly on Sunday, Mondays, Wednesday and Thursday every week.

Post Measurements: The researcher did the measurements from 19/9 to 23/9/2009 for the three experimental groups in the physical variables and performing some defensive skills in the same way as per-measuring.

RESULTS AND DISCUSSION DISCUSSION

As we have seen from Table 1 ,there are statistically guiding differences at level 0.05 between per measuring and post measuring for the first group that used weights training in the variables for the post measuring so the researcher sees that these results come from the power of physical effects that were used inside the program of training in addition to the duration of the program which reached eight week to make changes in the muscular ability and the performance level for some defensive skills because of adapting to the physical endurance. This result matches that developing physical abilities lead to developing skillful performance [4].

From Table 2, there are statistically guiding differences at the level 0.05 between per and post measures for the second experimental group that used to Plyometric in the variables of the research for the post measuring and the researcher due this to applying the suggested plyometric training program which applied on the second experimental group and joining the plyometric trainings with skill for handball is the plyometric in the same way of muscular work that caused improvement in

Table 1: Differences between the two measures pre and post the group's first pilot in the variables under consideration (N = 8)

Variables	Measuring unit	Pre-measurement		Post-measurement		Value (T)
		Mean	Deviation	Mean	Deviation	
Jump and reach test	cm	26.63	1.302	29.63	0.744	5.293*
Jump and reach test form motion	cm	31.50	0.756	33.50	0.926	4.467*
Broad jump form steady	cm	180.38	1.144	182.88	1.642	3.305*
Sit from lying down	cm	17.00	1.069	19.75	1.282	4.296*
Raise high the trunk of the lie	No.	18.13	1.885	19.87	2.031	1.661
Pushing 3 kg ball medical	cm	3.74	0.114	3.94	0.118	3.225*
Folding the two arms completely form deep lying	M.	13.25	1.669	14.25	1.035	1.347
Defensive movements	No.	23.47	0.634	24.13	0.322	2.456*
Block	No.	3.38	0.124	3.49	0.144	1.531

* Significance level 0.05 = 2.365

Table 2: Differences between the two measures pre and post the second experimental group in the variables under consideration (N = 8)

Variables	Measuring unit	Pre-measurement		Post-measurement		Value (T)
		Mean	Deviation	Mean	Deviation	
Jump and reach test	cm	26.75	1.282	29.75	0.886	5.093*
Jump and reach test form motion	cm	31.19	1.361	33.87	0.641	4.714*
Broad jump form steady	cm	180.94	0.737	182.22	3.523	5.351*
Sit from lying down	cm	16.83	1.021	20.12	1.458	4.890*
Raise high the trunk of the lie	No.	17.50	0.926	20.25	1.488	4.151*
Pushing 3 kg ball medical	cm	3.74	0.114	3.98	0.132	3.641*
Folding the two arms completely form deep lying	M.	13.00	1.512	15.25	1.282	3.003*
Defensive movements	No.	23.18	0.340	24.15	0.349	5.267*
Block	No.	3.43	0.087	3.75	0.094	6.610*

* Significance level 0.05 = 2.365

Table 3: Differences between the two measures pre and post-third of the experimental group in the variables under consideration (N = 8)

Variables	Measuring unit	Pre-measurement		Post-measurement		Value (T)
		Mean	Deviation	Mean	Deviation	
Jump and reach test	cm	27.00	1.069	31.50	0.756	9.093*
Jump and reach test form motion	cm	30.75	1.035	36.00	1.195	8.786*
Broad jump form steady	cm	180.74	1.193	199.25	2.188	19.65*
Sit from lying down	cm	16.88	1.126	23.50	0.926	12.014*
Raise high the trunk of the lie	No.	17.13	2.100	24.00	1.309	7.345*
Pushing 3 kg ball medical	cm	3.64	0.283	4.51	0.189	6.842*
Folding the two arms completely form deep lying	M.	13.38	1.061	17.75	0.884	8.372*
Defensive movements	No.	23.29	0.360	25.46	0.374	11.06*
Block	No.	3.46	0.151	4.02	0.020	9.727*

* Significance level 0.05 = 2.069

Table 4: Analysis of variance research groups in the three dimensional measurements of the variables selected (N = 24)

Variables	Sources of variation	Squares Total	Degrees of freedom	Mean-Square	Value (F)
Jump and reach test	Among groups	17.583	2	8.792	13.804*
	inside groups	13.375	21	0.637	
Jump and reach test form motion	Among groups	29.083	2	14.542	16.179*
	inside groups	18.875	21	0.899	
Broad jump form steady	Among groups	1118.58	2	559.292	84.346*
	inside groups	139.25	21	6.631	
Sit from lying down	Among groups	68.25	2	34.123	22.135*
	inside groups	32.375	21	1.542	
Raise high the trunk of the lie	Among groups	83.250	2	41.625	15.506*
	inside groups	56.375	21	2.865	
Pushing 3 kg ball medical	Among groups	1.629	2	0.814	36.602*
	inside groups	0.467	21	0.022	
Folding the two arms completely form deep lying	Among groups	52.00	2	22.286	16.597*
	inside groups	24.50	21	1.167	
Defensive movements	Among groups	9.321	2	4.660	38.252*
	inside groups	2.558	21	0.122	
Block	Among groups	1.130	2	0.565	56.398*
	inside groups	0.210	21	0.010	

* Value (F) at level 0.5 = 2.069

Table 5: Differences between the averages for the research groups in the three dimensional measurements of selected tests

Variables	Group	Mean	The differences			L.S.D
			1	2	3	
Jump and reach test	Weight	29.75		0.125	1.875*	0.613
	Plyometric compound	29.63			1.750*	
		31.50				
Jump and reach test form motion	Weight g	33.75		0.375	2.50*	1.049
	Plyometric compound	32.25			2.125*	
		35.75				
Broad jump of steady	Weight	182.88		5.250*	16.375*	4.653
	Plyometric compound	184.25			11.125*	
		196.50				
Sit from lying down	Weight	22.25		0.375	3.750*	2.811
	Plyometric compound	19.87			3.375*	
		23.50				
Raise high the trunk of the lie	Weight	19.87		0.375	4.125*	2.905
	Plyometric compound	20.25			3.750*	
		24.00				
Pushing 3 kg ball medical	Weight	3.94		0.034	0.569*	4.133
	Plyometric compound	3.90			0.535*	
		4.46				
Bending the arms fully lie	Weight	14.25		1.000	3.500*	1.842
	Plyometric compound	14.75			2.500*	
		17.50				
Defensive moves	Weight	24.13		0.019	1.331*	0.865
	Plyometric compound	24.75			1.313*	
		25.62				
Block	Weight	3.49		0.255*	0.531*	0.169
	Plyometric compound	3.61			0.276*	
		4.01				

the muscular ability for arms and legs in addition to defensive movements and the block accordions to the power of training effects in using this style and the right performing and right choice for the exercises and training tools (boxes - bars - grades) and doing different leaps and jogging on and among boxes and the bars, also running and grades climbing and descending all that lead to developing the muscular ability in legs contained in vertical and horizontal jump distance and also using the medical balls and damples and boxing forms in exercise sties leads to developing the arms muscles in addition to the Plyometric training reduce the journal time after jumping this result matches [4-9]. All these studies agreed that the importance of using Plyometric training for achieving abstract increases muscles that leads to raise the of skill level.

Table 3 show that there are statistically guiding differences at the level 0.05 between the pre and post measuring for the 3rd experimental group that used the compound training in the variables for the post measuring the researcher dues this to applying the compound training inside the training program that effected

positively on developing the muscles power and defensive skills. This matches previous studies stating that compound training is the best training which is used because through it we can combine all benefits of weight and Plyometric [10]. This result matches Factors [11] who referred to the differences between the pre and post measuring for the post measuring in the physical variables during using the compound.

From tables 4 and5, there are statistically guiding differences between research 3 groups as following between the first experimental group (weight training) and the second experimental group (plyometric training) for the plyometric group and between the first experimental group (weights training) and the third experimental group compound training in all the variables for our of the compound training group and between the second experimental group (plyometric) the third experimental group (the compound training) and for our of the compound group the researches kinds that the reason exceeding the third group which used the compound training program on the first and the second in the post measuring for the muscles ability and performing some

Table 6: Ratios improved telemetric for tribal for the two experimental and control groups in physical variables and defense in question

Variables	Training weight			Training Plyometric			Training compound		
	Pre-	Post	improve -ment %	Pre-	Post	improve -ment %	Pre-	Post	improve -ment %
Jump and reach test	26.63	29.63	11.27	26.75	29.75	11.21	27.00	31.50	16.67
Jump and reach test form motion	31.50	33.50	6.35	31.19	33.87	8.59	30.75	36.00	17.07
Broad jump of stability	180.38	182.88	1.39	180.94	188.22	4.02	180.74	199.25	10.24
Sit from lying down	17.00	19.75	16.18	16.83	20.12	19.55	16.88	23.50	39.22
Raise high the trunk of the lie	18.13	19.87	9.60	17.50	20.25	15.71	17.13	24.00	40.11
Pushing 3 kg ball medical	3.74	3.94	5.35	3.74	3.98	6.42	3.64	4.51	23.90
Bending the arms fully lie	13.25	14.25	7.55	13.00	15.25	17.31	13.38	17.75	32.66
Defensive moves	23.47	24.13	2.81	23.18	24.15	4.18	23.29	25.46	9.32
Block	3.38	3.49	3.25	3.43	3.75	9.33	3.46	4.02	16.18

defensives skills (defensive motions - block) due to applying the compound training inside the program as the compound is the best used program as it is a combine for benefits of weights and combining these training gives a chance for physical performing efficiently. This was assured who said that compound training is the best training because it combined both weight and plyometric training benefits [3].

This result matches Adams [1] that regular training by using weight for six weeks leads to increase of Jump and reach about 3.3 cm and the plyometric leads to Increase of jump about 3.8 cm, but the compound increase jump about 10.7 cm.

In Table (6) , plyometric group exceeds the weight group in the proportions of improvement in post measuring more than pre et reached 19.55% in the variable of sitting from lying (knees are bent) and the least proportion of improvement 4.02% in horizontal jump from steady the compound training exceeded weight and plyometric group about 39.22% in the variable of sitting from lying knees are bent and the least improvement 9.32% in the variable of defensive motions for the post measuring, The researcher sees that exceeding the third experimental group which used the compound training on the first and second group back to in the program there is a combination between the plyometric and weigh at the same experimental at unit and there is attention to same defensive motions and the block by weight jackets and rubber topes and concentrating on training tests that similar to the skill performing and matching the training endurance and duration and the intervals during the research sample and during attention to the individual differences during designing the training program by using the compound trainings which are used in improving and developing the muscle ability and performing some defensive movement.

This matches results of previous studies [4, 11-13] of the percentage improvement in the variables of physical and level of skill performance as a result of the use of training complex that integrates training weights and training plyometric as those training programs working on development of muscular power and the level of performance.

CONCLUSION

- The suggested training program by using weight training has a positive effect on the growing up and development the muscle ability and the level of performing some defensive skills (defensive movements - block) belongs the first experimental group.
- The suggested training program has a positive effect on the muscle ability and the level of performing some defensive skills (defensive movements - block) belongs the second experimental group.
- The suggested training program by using the compound training has a positive effect on growing up and developing and the muscle ability and the level of performing some defensive skills (defensive movements - block) belongs the third experimental group.
- The results of measurement proved excellence the experimental group which used plyometric training program on the first experimental group which used weight training in all muscle ability training and performing some defensive skills (defensive movement - block).
- The results of measurement proved excellence the third experimental group which used the compound training to the first group which used weight training and the second group weight used plyometric in all training.

Recommendations:

- Using weight training and plyometric training together are an active means in development the muscular ability and some defensive skills (defensive movements - block).
- Applying the suggested compound training program in the handball players in all different stages of age has a role in developing the some defensive skills.
- To benefit of results in the study in planning the training to the sports season and putting programs for using the compound training to annual training plan in handball.

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