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EFFECT OF 12 WEEKS OF PLYOMETRIC WITH SKILL ORIENTED EXERCISES ON JUMPING ABILITIES AMONG BADMINTON PLAYERS

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Abstract: Leg explosive power is one of the versatile motor fitness component which demands in various games and sports to enhance athletes performance. Badminton is a game in which maximum court area can be covered through proper stepping and jump. The main purpose of the study was to determine the effect of 12 weeks of plyometric with skill oriented exercises on the jumping abilities of badminton players. The study was conducted with 50 northeast region badminton players, 25 experimental and 25 control group from northeast region between the age group of 18 to 25 years. Twelve (12) weeks of exercises program was employed to the experimental group only. Vertical Jump test was used (score was recorded in centimeter) as a tool to collect and analyze data before and immediately after completion of 12 weeks of exercises program. Jamovi 2.0.0.0 version software was used to examine the data, to test the hypothesis dependent't' test for mean difference and ANCOVA for the main effect was employed; the level of significance was set at 0.05. The normality of the data was analyzed with Shapiro Wilk, p value=0.113and it was found no violation (p>0.05). In conclusion the result shows that there was significance improvement observed between the adjusted mean of the experimental group (ANCOVA, F=49.3, p<0.001; (p<0.05) as compared to control group; So Post hoc tukey test was employed for pair wise mean comparison (MD=4.37, p<0.001); insignificance mean difference was observed between pre and posttest mean of control group (t=1.929[@], p=0.066>0.05) but significance difference was established among pretest and posttest mean of experimental group (t=10.4*, p≤0.001;p<0.05) , Thus the researcher established significant improvement in vertical jump among badminton players after twelve (12) weeks of plyometric with skill oriented exercises program.

Index Terms: Badminton, Plyometric exercises, Skill oriented exercises, Jumping Ability (Leg Explosive Power).

1. Introduction

Explosive power is vital motor fitness component in various games and sports. Badminton game is all about fine stepping with proper finishing jump all around the court; using suitable jump at right time could help players to reach the targeted area right before time. Nowadays, it is very rare to see badminton games without involving any jump in various standard tournaments. Players need various scientific training to accommodate such motor qualities to be able to face against tough players also to survive in todays' highly competitive world. Thus, the researcher undertaken and stated the present as, "Effect of twelve (12) weeks of Plyometric with Skill Oriented Exercises on Jumping Abilities Among Badminton Players".

2. Significance of the Study

2.1 The present study has highlighted the effect of twelve (12) weeks of plyometric with skill oriented exercises among badminton players
2.2 The result of the study would be helpful in constructing training program
2.3 It would help to motivate the players to improve their jumping ability
2.4 It would also help physical education teachers as well as coaches to design training plan.

3. Purpose of the Study

To determine the effect of twelve (12) weeks of plyometric exercises with skill oriented exercises on jumping ability of badminton players

4. Hypothesis

It was hypothesized that there might be significant effect of twelve (12) weeks of plyometric with skill oriented exercises on jumping ability among badminton players

5. Methodology

5.1 Sources of Data

The data required to examined for the study was collected from Dibrugarh University along with local academy players

5.2 Selections of Subjects

5.2.1 Fifty (50) male badminton practicing players were selected as subject

5.2.2 Aged were ranging from 18 to 25 years

5.2.3 Subjects were divided into two equal groups; twenty five (25) experimental groups, twenty five (25) control group for the study.

5.3 Sampling Procedure

Simple Random Sampling Method was adopted for selection of subjects

5.4 Tools and Criterion Measures

To test the explosive power (jumping ability) of the subjects, Vertical Jump Test was used and the score was recorded in centimeter.

5.5 Collection of Data

The necessary score required to examine for the test were collected before the administration of the exercises program and immediately after completion of the exercises program; clear instruction was given before applying any test to the subjects to avoid errors during the test.

5.6 Administration of Training Program

The exercises program was employed to the experimental group only for three (3) days a week (Monday, Wednesday and Friday). There was no training program on Sunday; Intensity and five (5) minutes duration was increased in the exercises program after two (2) weeks up to the ends of 12 weeks.

6. Analysis of Data

The data pertaining to study was examined statistically through JAMOVI 2.0.0.0 version software and to test the hypothesis dependent t test and ANCOVA were employed in order to resolve the significance difference and effect, if any. The level of significance to test the hypothesis was set at 0.05.

Table no.01

Testing of Normality

Dependant Variables	Mean	SD	Sk	Ku	Shapiro-Wilk	
					W	*p value*
Vertical Jump Test (experimental/control group)	26.69	3.303	-0.31948	-0.83	0.962	0.113

Sk= Skewness**, Ku=** Kurtosis**, W=** Shapiro Wilk Coefficient**, p value=** Shapiro Wilk p

Prior to analysis, the data were examined for normality through JAMOVI software and it was found that the assumption for normality was not violated as the Shapiro Wilk value, W=0.962, p=0.113; (p>0.05).

Table no.02

Description of Mean, Standard Deviation and t ratio for the Pre and Post Test Data Analysis on Vertical Jump Test of Experimental Group

Variables	Mean		S.D.		Mean diff. (MD)	S.E. of Mean Diff.	t ratio	*p value*
	Pre test	Post test	Pre test	Post test				
Vertical Jump Test	26	33.7	3.32	6.24	7.77	0.75	10.4*	< .001

Table no.02 shows the obtained‘t’ value (10.4*) and p <0.001 indicates that there was highly significance difference found (p<0.05) between the pretest and posttest mean of the experimental group.

Table no.03
Description of Mean, Standard Deviation and t ratio for the Pre and Post Test Data Analysis on Vertical Jump Test of Control Group

Variables	Mean		S.D.		Mean diff. (MD)	S.E. of Mean Diff.	t ratio	*p value*
	Pre test	Post test	Pre test	Post test				
Vertical Jump Test	27.4	27.34	3.191	3.131	0.06	0.031	1.929@	0.066

Table no.03 shows (t=1.929@, p=0.066) that there was no significance difference observed between the pretest and posttest mean of the control group

6.1 Computation of Analysis of Covariance to check the actual effect of exercises program (pretest data as Covariate) after adjusted with the pretest and posttest data of experimental and control group

Table no.04
6.1.1 Description of Pretest, Posttest and Adjusted Mean of Vertical Jump Test for Analysis of Covariance

Groups	Pretest Mean	Posttest Mean	Adjusted Mean
Experimental	26	33.7	30.9
Control	27.4	27.34	26.5

Table no.05
6.1.2 Analysis of Covariance (ANCOVA) for Vertical Jump Test

	Sum of Squares	df	Mean Square	F value	P value
Treatment	96	1	96.05	49.3	< .001*
Errors	91.5	47	1.95		

Table no.05 Analysis of Covariance (ANCOVA) table above is based on the adjusted mean value which was displayed in table no.04 (pretest as covariate). Based on the table there was significance difference found, F=49.3; p<0.001* after implementing 12 weeks of exercises program. Thus the data was subjected to post hoc tukey test for paired wised mean comparison, which is shown below in table no.06

Table no.06
Post Hoc Tukey Pair Wise Mean Comparison between Experimental and Control Group of Vertical Jump Test

Experimental	Control	Mean Difference	p_{tukey} (Sig.)
30.9	26.5	4.37	< .001*

Table no.6 implicates the pairwise comparison between experimental and control group of vertical jump test (M.D=4.37). The P value (<.001*) also shows that the experimental group has exhibited significant improvement in vertical jump among the badminton players as compared to that of control group after implementing twelve (12) weeks of exercises program. The graphical representation of the Pretest Mean, Posttest Mean and Adjusted Mean of the vertical jump test has been shown in the figure below.

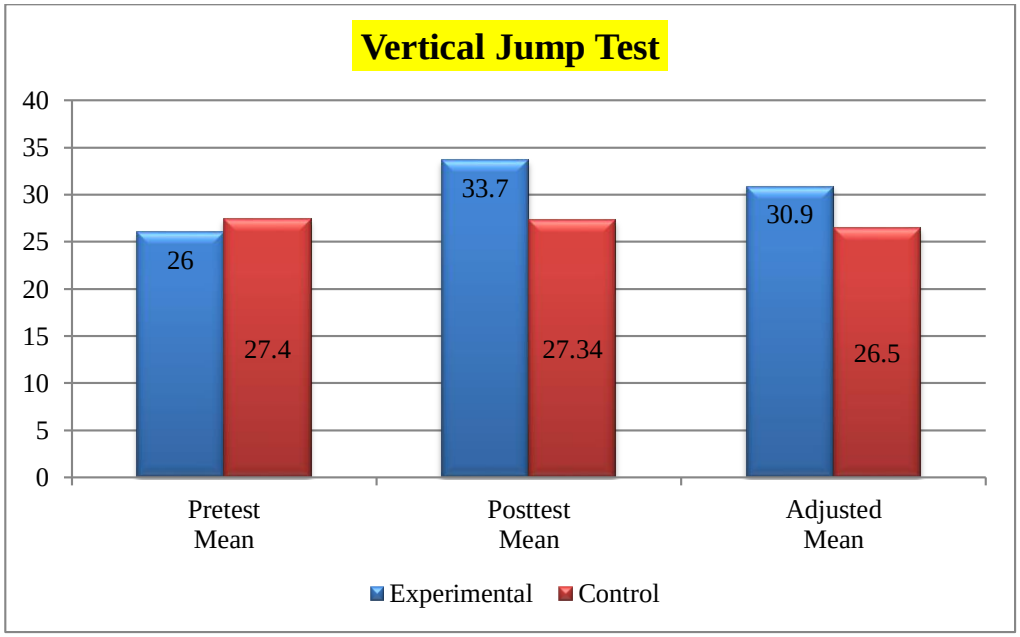

Fig no.01: Diagram Showing Pretest Mean, Posttest Mean and Adjusted Mean Comparison of Vertical Jump Test between Experimental and Control Group

7. Discussion on Findings

On the basis of finding from table 2, 5 and 6 it is clearly signify that the experimental group has shown significant improvement after 12 weeks of exercises program whereas insignificance difference was notified in control group as per table no.03 of vertical jump test analysis.

8. Discussion on Hypothesis

At the beginning of the study it was hypothesized that there might be significant effect of twelve (12) weeks of plyometric with skill oriented exercises on jumping abilities among badminton players. The result stated above revealed that the significant improvement was observed after twelve (12) weeks of exercises program. Hence the hypothesis stated earlier in the study is accepted.

8. Conclusions

8.1 Players has shown significant improvement in vertical jump after 12 weeks of exercises program

8.2 The players of the control group have shown no sign of improvement in vertical jump even after 12 weeks.

8.3 Badminton players' needs plyometric with skill oriented exercises to improve their jumping abilities which ultimately help them to enhance their performance.

8.4 The Physical Education Teachers and Coaches are recommended to imply plyometric with skill oriented exercises in their training program.

REFERENCES

[1] Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985); Physical Activity, Exercise and Physical Fitness: Definitions and Distinctions for Health Related Research. Public Health Rep, 100 (2), 126-131

[2] Chaalali, A., Rouissi, M., Chtara, M., Owen, A. Bragazzi, N.L., Moalla, W., Chaouachi, A., Amri, M., & Chamari, K. (2016). Agility Training in Young Elite Soccer Players: Promising results Compared to change of Direction Drills; *Journal of Biology of Sports*, 33(4), 345-351.

[3] Chidambara Raja.S. (2014); Effect of Yogic Practices and Aerobic Exercises on Strength Endurance, Self-Concept and Blood Pressure; *International Journal of Recent Research and Applied Studies*, 2014, 1, 6(7), 33 - 36.

[4] Castagna C, Abt G, Manzi V, Annino G, Padua E, D'Ottavio S. "Effect of recovery mode on repeated sprint ability in young basketball players", ***Journal of Strength & Conditioning Research,*** 2008 May;22(3):923-9.

[5] Clutch, D., Willon, M., McGowan C., & Bryce G. (1983).Effects of Depth Jumps and Weight Training on Leg Strength and Vertical Jump. *Journal of Research Quarterly for Exercise and Sports*, 54, 5-10.

[6] Chui D.A. (1992); Jumping into Plyometric, USA Champaign IL: Human Kinetics Publication.

[7] Chaturvedi, R. L., Yadav. J., & Kalra, S. (2013). Compare the effect of Wobble Board as Bilateral Proprioceptive Exercise to Unilateral Leg Standing Exercise in Knee Osteoarthritis Patients: A Randomized Controlled Trial. *International Journal of Arthritis and Rheumatism*, 2 (1), 47-51.

[8] Clutch, D., Willon, M., McGowan C., & Bryce G. (1983).Effects of Depth Jumps and Weight Training on Leg Strength and Vertical Jump. *Journal of Research Quarterly for Exercise and Sports*, 54, 5-10.

[9] Delextrat A, Cohen D. "Strength, power, speed, and agility of women basketball players according to playing position", ***Journal of Strength & Conditioning Research,*** 2009 Oct;23 (7): 1974-81.

[10] De Vos, N., Singh, N., Ross, D., Stavrinos, T., Orr, R. & Fiatarone, S.M.A. (2005), Optimal Load for Increasing Muscle Power During Explosive Resistance Training in Older Adults. *The Journals of Gerontology, 60A* (5), 638–647.

[12] Dhanraj, S. (2014); Effects of Ladder Training on Selected Motor Fitness Variables among Handball Players. *International Journal of Scientific Research*, 3(*4*), 406-407.

[13] Delextrat A, Cohen D. "Strength, power, speed, and agility of women basketball players according to playing position", ***Journal of Strength & Conditioning Research,*** 2009 Oct; 23 (7): 1974-81.

[13] Durham, M. P., Shimp-Bowerman, J. A., Adams, K. J., Beming, J. M., Kipp,R. L., & Fabian, N. M.., "Effects of plyometric and weighted plyometric training on lower body anaerobic power output", ***Medicine and Science in Sports and Exercise,*** (2001) ***33(5),*** Supplement abstract 765.

[14] Durham, M. P., Shimp-Bowerman, J. A., Adams, K. J., Beming, J. M., Kipp, R. L., & Fabian, N. M.., "Effects of plyometric and weighted plyometric training on lower body anaerobic power output", ***Medicine and Science in Sports and Exercise,*** (2001) ***33(5),*** Supplement abstract 765.

[15] Eskandar, T., Asghar, N., & Ebrahim, K. (2014).The Effect of 8 Weeks of Plyometric and Resistance Training on Agility, Speed and Explosive Power in Soccer Players. *European Journal of Experimental Biology*, 4(1), 383-386.

[16] Gaurav, S., Pooja, A., Shishir, N. & Tanvi, A. (2013), Comparative Analysis of Effectiveness of Conventional Proprioceptive Training and Multistation Proprioceptive Training on Vertical Jump Performance in Indian Basketball Players. *Journal of Exercise Science and Physiotherapy*, 9(2), 97-104.

[17] Ichrak, B., Yassin, N., Roy, S., & Mohamed, S.C. (2018), Effects of Combined Balance and Ploymetric Training on Athletic Performance in Female Basketball Players. The Journal of Strength and Conditioning Research, 243, doi: 10.1519/JSC.0000000000002546.

[18] Ignjatovic, A. M., Markovic, Z.M. & Radovanovic, D.S. (2012), Effects of 12 weeks Medicine Ball Training on Muscle Strength and Power in Young Female Handball Players; *Journal of Strength & Conditioning Research*, 26(8), 2166-2173.

[19] Joshi, S.R. (1986), "Effect of warming up exercises on physical fitness and skilled performance", *SNIPES Journal*, 9:3, 50

[20] Jain, K. (2013), Effects of Plyometric, Resistance Training and their Combination on the Fitness Level and Performance of Basketball Players Drill, (*Unpublished Ph.D. Thesis*), Panjab University, Chandigarh.