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## Assesment Of Plyometric And Saq Training On Respiratory Parameter Of Handball Players

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### **ABSTRACT**

*Handball is very fascinating modern game with fast and excitement action. Successful performance in Handball requires the good motor abilities and physiological and precise skill to accomplish desired result. This study aimed to find out the effect of 12 week Plyometric and SAQ training on physiological variable of handball players. For this purpose the researcher selected 90 male handball players (30 each from plyometric, SAQ & control group), age ranges between 18-25 years. Samples were selected at different playing levels i.e. AIU, SGFI, HFI and PHA from Punjab state. Random sampling technique was applied to select the sample. Physiological variable i.e. pulse rate was selected for this study. To find out the difference among various groups (Plyometric, SAQ & Control group) of pulse rate variable 'ANCOVA' test was applied at 0.05 level of significance. The results showed that experimental groups (Plyometric & SAQ) of handball players enhance the level of pulse rate as compare to control group.*

**KEY WORDS:** Pulse rate, Physiological, Plyometric Group, SAQ Group, Control Group, ANCOVA.

### **INTRODUCTION**

Sport plays a very prominent role in the modern society. It is important for individuals, group, nation and indeed the world. Throughout the world, sport has a popular appeal among the people of all ages and both sexes. The human body is an amazing machine. All human movements, from the blinking of an eye to the running of a marathon, depend on the proper functioning of skeletal muscles. Whether it is the strained effort of a sumo wrestler or the graceful pirouette of a ballet dancer, physical activity can be accomplished only through muscle force. A major goal in healthcare is to increase life expectancy and eminently improve healthy and happy aging by compressing morbidity into a shorter period in a later stage of the lifespan (Tesch & Wurm, 2009). Life expectancy has increased rapidly during the last century and disability-adjusted life expectancy has been extending as well. Regular

exercise and physical activity throughout a lifespan can improve life expectancy (Reimers et. al., 2012 and Samitz et. al., 2011) and disability-adjusted life expectancy, as shown in many studies (May et. al., 2015 and Bronnum et. al., 2007).

(Singh & Deol, 2016) present study was to determine the effect of 12 weeks of S.A.Q drills training programme on selected physical, physiological variables and hockey skills. The researcher found that after giving the S.A.Q drill training we found that there is significant effect on the selected physical fitness variables (Speed, Agility, Quickness), selected physiological variables (vital capacity, resting pulse rate, pulmonary ventilation) and hockey skills performance. But there was no significant effect of the S.A.Q drill training on the physiological variable (body mass index). (Bharshankar et. al. 2003) conducted the study to examine the effect of Yoga on cardiovascular function in subjects above 40 years of age, pulse rate, systolic and diastolic blood pressure and vice-versa. From the study it was observed that significant reduction in the pulse rate occurs in subjects practicing yoga ( $P < 0.001$ ). The difference in the mean values study group and control group was also statistically significant ( $P < 0.01$  and  $P < 0.001$ ) respectively.

## **MATERIAL AND METHODS**

The purpose of the study was to find out the effect of 12 week plyometric and SAQ training on physiological variable (pulse rate) of handball players. Total 90 male handball players were selected; (30 each from plyometric, SAQ & control group) age ranges between 18-25 years. The data was obtained from Punjab.

## **VARIABLE**

### **PHYSIOLOGICAL VARIABLE:**

1. Pulse rate

## **STATISTICAL CONSIDERATION**

For interpretation of the data statistical techniques of 'ANCOVA' test was applied to find out mean differences.

## **RESULTS**

A different type of descriptive statistic such as mean was computed to describe variable statistically. The level of significance was set at .05. Its results have been depicted in the following tables.

**TABLE – 1**  
**ANALYSIS OF CO-VARIANCE (ANCOVA) OF PULSE RATE TEST AMONG**  
**PLYOMETRIC, SAQ AND CONTROL GROUPS**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Corrected Model</b>	2961.15 <sup>a</sup>	3	987.05	538.73	.000
<b>Intercept</b>	21.79	1	21.79	11.89	.001
<b>PULSE RATE</b>	270.20	1	270.20	147.47	.000
<b>Groups</b>	1144.69	2	572.34	312.38	.000
<b>Error</b>	157.56	86	1.83		
<b>Total</b>	430919.00	90			
<b>Corrected Total</b>	3118.72	89			

a. R Squared = .949 (Adjusted R Squared = .948)

b. Computed using alpha = .05

Table 1 represents the F value for comparing pulse rate among control, plyometric and SAQ groups, since p-value for the F- statistics is .000, which is less than 0.05, it is significant. Thus the alternative hypothesis is accepted. Since the F-value is significant, to find out the critical differences, post hoc test has been made, which is shown in the next table.

**TABLE - 2**  
**PAIRWISE COMPARISONS OF PULSE RATE TEST AMONG PLYOMETRIC,**  
**SAQ AND CONTROL GROUPS**

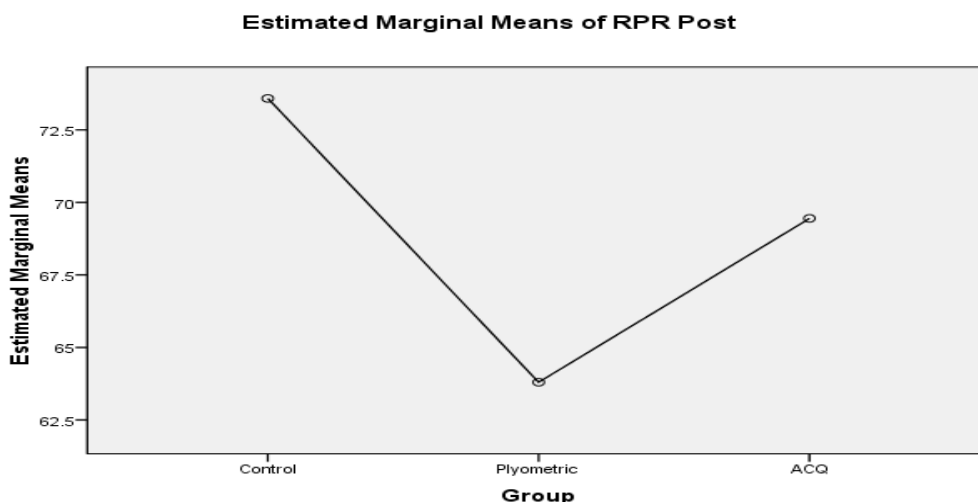
GROUP (MEAN)		Mean Diff	Std. Error	P-VALUE (Sig.)
<b>CONTROL GROUP</b> N= 30 (73.58 <sup>a</sup> )	<b>PLYOMETRIC GROUP</b>	-9.78*	.44	.000
<b>PLYOMETRIC GROUP</b> N= 30 (63.80 <sup>a</sup> )	<b>SAQ GROUP</b>	-5.64*	.37	.000

<b>SAQ TRAINING GROUP</b>	<b>CONTROL GROUP</b>			
N= 30 (69.44 <sup>a</sup> )		-4.13*	.53	.000

The mean difference is significant at the 0.05 level.

From table - 2 the following conclusions were drawn:

Table 2 showed that mean difference of pulse rate between control group and plyometric group is found to be significant 9.78\*. Plyometric group (63.80) has exhibited significantly lower pulse rate than their across control group (73.58). Mean difference of plyometric group and SAQ group is found to be significant -5.64\*. SAQ group (69.44) has exhibited significantly supreme in pulse rate than plyometric group (63.80). Mean difference of pulse rate between SAQ group and control group is found to be significant -4.13\*. SAQ group has exhibited significantly lower pulse rate than control group.



**FIGURE - 2: MEAN SCORES OF PULSE RATE TEST AMONG PLYOMETRIC, SAQ AND CONTROL GROUPS**

**DISCUSSION**

A perusal at the analysis of the variance of the pulse rate that the rate of pulse has improved after 12 weeks of training. There is significant difference found between pre & post data among all the groups. Experimental group affects the improvement rate of pulse rate & vice versa. The literature proves that exercise & physical activity improves our cardio vascular system & improves the pumping rate of the heart which improves pulse rate level of

handball players. The results of the study conducted by Singh & Deol (2016) agreed with the results of this study where the results of the study suggested that significant effect of the S.A.Q drill training is found on resting pulse rate. Senthil (2015) conducted a study on “effects of 12 weeks of plyometric training programme on selected physical and physiological variables among high school boys” he has also found that the plyometric training group showed the significant improvement on resting pulse rate. These findings were also similar to the results of Kamalakkannan and Mahadevan (2012).

## CONCLUSION

It is concluded from the above detection that the experimental group were lesser pulse rate as compared to their counterparts.

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