

COMPARATIVE STUDY OF BODY FAT PERCENTAGE AMONG NATIONAL AND STATE LEVEL FEMALE GYMNASTS

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INTRODUCTION

Body composition plays an important role to achieve the peak performance level. It is the study of three components bone mass, muscle mass and body fat percentage. The body fat percentage is the amount of fat that present in the body. We all need fat but excess fat responsible for the diseases. It present in the form of adipose tissues under the skin and around the soft organs in the body. Wang, ZM et. al, (1992) body composition is the study of three components in the body like bone mass, muscle mass and fat mass. But there is one more component called remainder mass which includes organs, nerves, blood vessels, fluid like water, potassium, calcium, sodium, etc. The human body consists of several levels of structural organization. They are associated with one another in various ways. Considering the increasing stages of complexity, five levels of body composition can be envisioned. Koley, S. and Singh J. et al (2005) also study on body is made up of chemical elements essential for life there are 50 different atoms are found in the body, the vast majority located in various tissue and organs. They are oxygen, carbon, hydrogen, and nitrogen, collectively account for more than 96 percent of adult body weight. Major eleven elements in the body are incorporated into compounds that represent the molecular level of body composition. These essential molecular include water, fat, protein, mineral and glycogen. The chemical compounds are assembled into either the cellular component or the extra cellular supporting components; for example, extra cellular fluid and solids, of which the skeleton makes up its major bulk. The combination of cells and extra cellular components form the tissue. The tissues are commonly categorized as muscular, nervous, connective and epithelial. The connectivity of different tissues is responsible to form numbers of body systems and the components of different systems, too, possess multiple organs that share an integrated function. The combination of the components of these four above mentioned levels culminates in the whole body. The human body is characterized by size, shape and its various dimensions.

OBJECTIVES OF THE STUDY

The purpose of the study was to investigate the difference between national and state level female gymnasts in respect to their body fat percentage.

METHOD OF THE STUDY

Forty female gymnasts selected through the purposive sampling technique (non probability sampling technique) and further divided into two groups known as state level female gymnast and national level female gymnasts each group have twenty state levels gymnasts and twenty national level gymnasts. The criteria of the national and state level female gymnasts were based upon their national and state level certificates, which certified the criteria of the both groups. On these base two groups of national and state level female gymnasts have been taken for this research problem.

TOOLS OF THE STUDY

Skin-fold calliper
Body fat percentage

VARIABLES OF THE STUDY

The following selected 4 areas were used to measure the body fat percentage for data collection on each subject by using standard methodology given by Weiner and Lourie (1969).

Bicep Skin fold (mm)
Triceps Skin fold (mm)
Sub scapular Skin fold (mm)
Supra iliac Skin fold (mm)

STATISTICAL TECHNIQUE OF THE STUDY

In this research problem there were two independent groups one were national level gymnasts another were state level gymnasts and researcher was compared them in respect to their speed and endurance to check which group have more and less speed and endurance, so researcher was used one way ANOVA (analysis of variance) with descriptive analysis statistical technique.

RESULTS AND DISCUSSION OF THE STUDY

TABLE NO. 1
COMPARISON OF NATIONAL AND STATE LEVEL FEMALE GYMNASTS IN
RELATION TO BICEPS SKIN-FOLD MEASUREMENT

Female Gymnast	N	Mean	SD	df1	df2	F	P Value
State Level	20	2.25	.57				
National Level	20	1.95	.57	1	38	2.66	P >.05

The table no. 1 shows that there is no significant difference (df=1, 38, F= 2.66, P>0.05) between state and national level female gymnasts in relation to bicep skin-fold measurement. Whereas the national level gymnasts were found leaner (M=1.95) than state level female gymnasts (M=2.25).

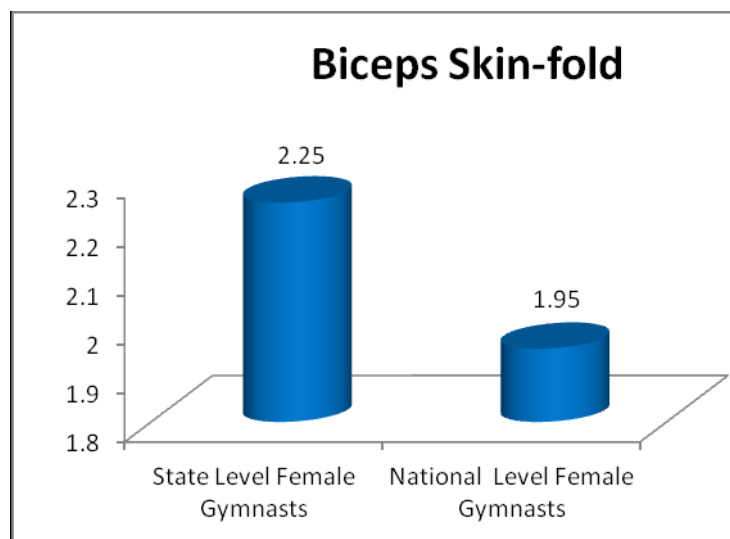


Fig. 01: Showing comparison of National and State level female gymnasts in relation to biceps skin-fold measurement.

**TABLE NO. 2
COMPARISON OF NATIONAL AND STATE LEVEL FEMALE GYMNASTS IN
RELATION TO TRICEPS SKIN-FOLD MEASUREMENT**

Female Gymnast	N	Mean	SD	df1	df2	F	P Value
State Level	20	5.98	3.05	1	38	1.61	P > .05
National Level	20	5.60	2.85				

In table no. 2 shows the difference of triceps skin-fold between state and national level female gymnasts, there is no significant difference (df =1, 38, F= 1.61, P>0.05 in both groups. Whereas the national level gymnasts were found leaner (M=5.60) than state level female gymnasts (M=5.98).

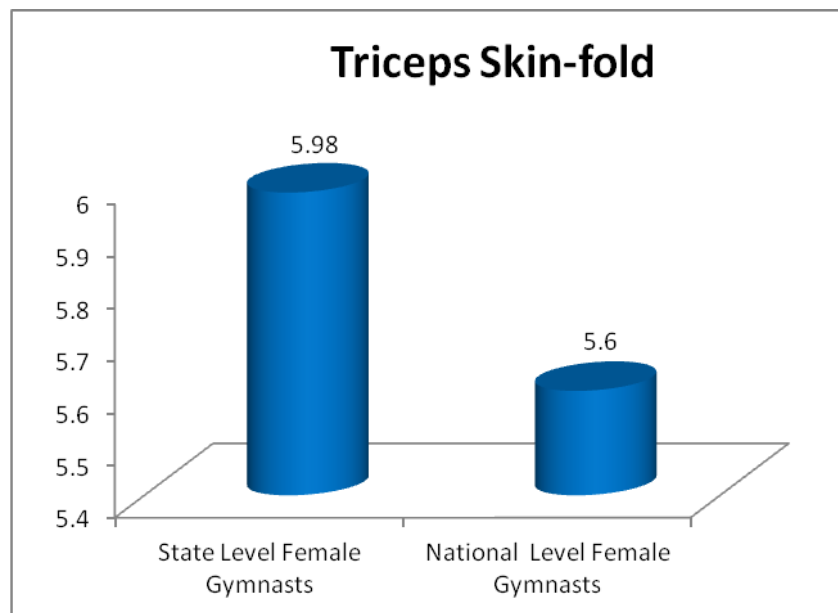


Fig. 02: Showing comparison of National and State level female gymnasts in relation to triceps skin-fold measurement

**TABLE NO.3
COMPARISON OF NATIONAL AND STATE LEVEL FEMALE GYMNASTS IN
RELATION TO SUB SCAPULAR SKIN-FOLD MEASUREMENT**

Female Gymnast	N	Mean	SD	df1	df2	F	P Value
State Level	20	7.71	2.85	1	38	.018	P > .05
National Level	20	7.81	1.67				

The table no. 3 represent that there is no significant difference (df = 1, 38, F= .081, P>0.05) between state and national level female gymnasts in relation to sub scapular skin-fold measurement. Whereas the national level female gymnasts were found heavier (M=7.81) than state level female gymnasts (M=7.71).

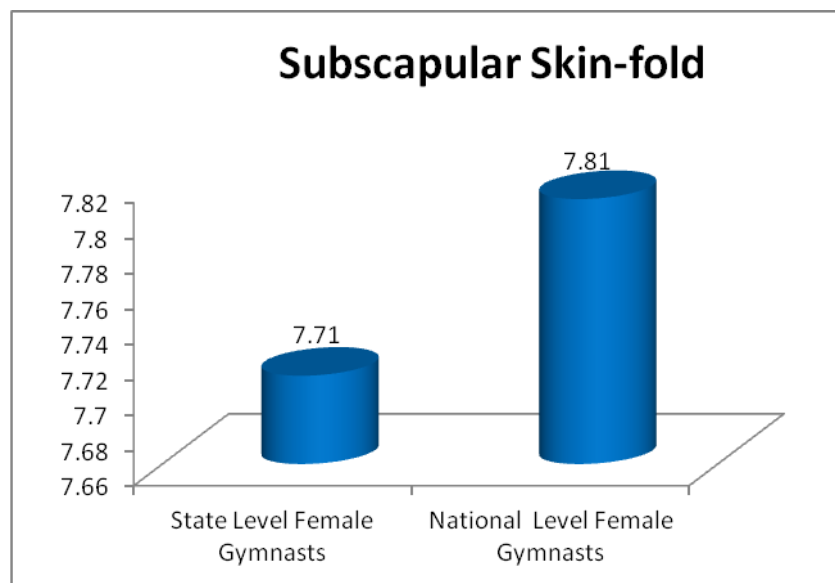


Fig. 03: Showing comparison of national and state level female gymnasts in relation to subscapular skin-fold measurement.

**TABLE NO.4
COMPARISON OF NATIONAL AND STATE LEVEL FEMALE
GYMNASTS IN RELATION TO SUPRA ILIAC
SKIN-FOLD MEASUREMENT**

Female Gymnast	N	Mean	SD	df1	df2	F	P Value
State Level	20	3.15	1.83				
National Level	20	2.33	.47	1	38	3.81	P >.05

In table no. 4 shows the difference of supra iliac skin-fold between state and national level female gymnasts, there is no significant difference (df =1, 38, F= 3.81, P>0.05) in both groups. Whereas the national level gymnasts were found leaner (M=2.33) than state level female gymnasts (M=3.15).

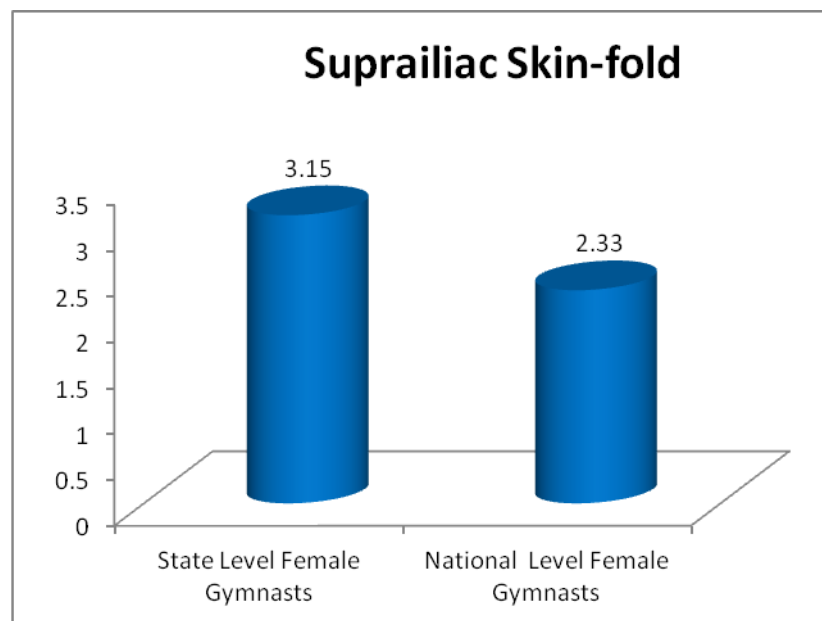


Fig: 04: Showing comparison of National and State level female gymnasts in relation to supra iliac skin-fold measurement.

**TABLE NO.5
COMPARISON OF NATIONAL AND STATE LEVEL FEMALE GYMNASTS IN
RELATION TO BODY FAT PERCENTAGE.**

Female Gymnast	N	Mean	SD	df1	df2	F	P Value
State Level	20	12.98	4.15				
National Level	20	12.40	3.17	1	38	0.25	P > .05

In table no. 5 shows the difference of body Fat percentage between state and national level female gymnasts, there is no significant difference ($df = 1, 38, F=0.48, P>0.05$) in both groups. Whereas the national level gymnasts were found less body Fat percentage ($M=12.40$) as compare to state level female gymnasts ($M=12.98$).

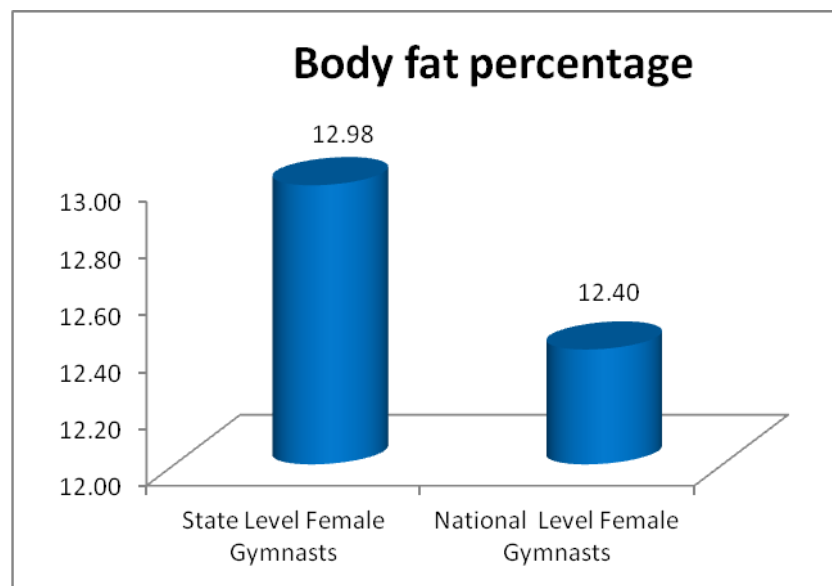


Fig. 05: Showing comparison of National and State level female gymnasts in relation to body fat percentage.

CONCLUSION

Conclusion is as essential step as investigation because it provides the brief information about the study. It provides the finishing touch and review to the whole of the critical work. In the present study the investigator has tried to find out the deference between State and National level female gymnasts in relation to their body fat percentage. Keeping the results and discussion in "view, following conclusions may be drawn: Results shows that there is significant difference found in biceps and supra iliac skin-fold measurement and non significance in triceps and sub scapular between both groups. The whole results of body fat percentage have shown that National level female gymnasts were found linear than the State level female gymnasts.

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