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Body Composition of College Top Players and College Students

—Comparison between the same body height,
body weight, two groups—

By *Sadayoshi Imae**

The purpose of this paper is to discuss the differences of body composition between College top players (19 regular players of Keio University Rugby Team who won the victory in All Japan Rugby Championship, in January 1960, 18—24 years of age, and 19 healthy male College students, 18—21 years of age, at Keio University served as subjects.

Measurements were taken of body height, body weight, body girth (Chest, Abdomen, Upper-arm, Forearm, Thigh, Calf) and skinfold thickness (Chest, Abdomen, Subscuplar, Triceps, Forearm, Thigh, Calf).

Based on these data;

Body density was calculated by using Nagamine's Formula,

% body fat by using Brozek's Formula,

and the comparison of body girth and body composition was discussed.

These results were following;

1. Body Girth:

Mean Chest girth of Rugby Players was about 4.7 cm bigger than the one of College students.

This difference was significant at 1 % level.

There were no significant differences relating to Abdominal girth, Upper-arm girth, Forearm girth, Thigh girth and Calf girth between two groups.

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2. Skinfold Thickness

Each mean skinfold thickness at seven sites in Rugby player group was from 47 to 60% thinner than that in College student group, relatively.

These differences were significant at 0.1% level.

3. Body Density

Mean body density of Rugby players was about 0.018 (g/cc) bigger than that of College students.

This difference was significant at 0.1% level.

4. % Body Fat

Mean % body fat of Rugby players was about 7.3% smaller than that of College students.

This difference was significant at 0.1% level.

5. Body Fat (kg)

Mean body fat of Rugby players was about 7.4 kg smaller than that of College students.

This difference was significant at 0.1% level.

6. LBM (kg)

Mean LBM of Rugby players was about 5.8 kg bigger than that of College student.

This difference was significant at 0.1% level.

7. Relationship between Body Weight and Body Fat

The correlation coefficient and a regression formula for two groups were following ;

Rugby player group

$$r = 0.7799$$

$$y = 0.19x - 5.42$$

College student group

$$r = 0.4847$$

$$y = 0.4x - 15.39$$

8. Relationship between Body Weight and LBM

The correlative coefficient and a regression formula for two groups were following;

Rugby player group

$$r = 0.9825$$

$$y = 0.8x + 6.16$$

College student group

$$r = 0.7645$$

$$y = 0.59x + 16.13$$