

BODY COMPOSITION OF PART-TIME STUDENTS IN UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

Dr. Donatus A. Aniodo

Abstract

The focus of this study was to determine the body composition status of part-time undergraduates in the University of Benin, Nigeria using percent body fat. The sample was made of 30 females and 13 males who were in the exercise physiology class. They volunteered to be part of the study. The instrument for data collection was the skin-fold caliper. The results showed that the females had more inferior body composition status than their male counterparts. It was also discovered that younger women were better in body composition than older ones, while the reverse was the case for the men. It was concluded that male students live more active life hence the better body composition. The researcher recommended that school owners should provide facilities and equipment for physical and health education programme to be able to build and maintain an active workforce with ideal body composition.

Body composition has remained an area of concern among sport scientists, exercise physiologist, sports administrators, experts in health promotion, coaches and even athletes. According to Baumgartner and Jackson (1995), suitable body composition is important for general health and appearance and for maximizing athletic performance.

Body composition is concerned with the fat free weight of the body and fat weight of the same body. So many people at times talk of fat weight and lean weight but not many really show a vivid understanding of what they are all about, even among those that ought to have knowledge of what it is all about, there is still the need to get acquainted with the ideal fat and lean weight. The percentage of the total body weight that is made up of fat is what determines the weight category of an individual (Birsley, 1996).

Prentice (1997) revealed that average college age women have between 20% - 25% of their total body weight made up of fats as against 12% - 18% for the average college age men. Individuals that lead very active lifestyle, in terms of physical exercises and activities tend to have less fat when compared with the sedentary individuals. Older individuals with decreased activity and uncontrolled or unregulated feeding are also likely to accumulate more fats (Paul & Walton, 2002, Insel and Roth, 2004).

Part time education students in Nigerian Universities are usually within the ages of 30 - 60years. Some of them have started declining in activity level. This decline in activeness may actually led to accumulation of fats which, if not checked, can result in health problems. However, these category of part time

students are mainly teachers of physical and health education in Nigerian schools. They are by that, supposed to be active individuals that would have not accumulated excess fats. According to Lehman (1992), the body composition of individuals who participate in physical activities differ from that of the non-participants. A visit to some of the schools where these students teach revealed that most of them do not have adequate facilities and equipments to teach physical and health education. Some of the schools do not even have physical and health education in their programmes.

It is in the light of the above that this study investigated the body composition status of part-time students using the percent body fat determined by skin fold measurements with an existing standard.

The standard for this study is the one established by Prentice (2007). The norm was based on data collected from college students. It took account skinfold measures at the triceps and the subscapula. The rating ranged from poor, which is the least level to excellent which stand the most ideal level of percent body fats

Purpose

The purpose of the study was to determine the body composition of the part-time students. It was also to find out if the long practices of physical activity and age have any impact on their body composition using skin-fold measures as a means of determining that.

Research Questions

The following questions were formulated and answered in this study.

1. What is percent body fat rating of the female part-time student of the department of Physical and Health Education of the University of Benin
2. What is percent body fat rating of the male part-time student of the department of Physical and Health Education of the University of Benin
3. What is the percent body fat rating of male and female part-time students according to age?

Methods

The researcher made use of purposive sampling techniques in choosing 43 final year Physical and Health Education Students who had a course in exercising physiology and volunteered to be part of the study.

Age

The information on the age of the participants was based on what was found in their files. The age was taken to the nearest birthday

Weight

The weights of the participants were measured using weight scale of a stadiometre. The participants had light clothing while on the scale with an erect

Body Composition of Part-Time Students In University of Benin, Benin City, Nigeria

body and with the head in its anatomical position. Each participant was asked to look forward without moving any body part. The measurement was taken to the nearest 0.5kg.

Height

The height was equally measured using the stadiometre. The subjects mounted the stadiometre with the same light clothing for weight measure and without any footwear. The student stood with the arm by the side and with the head at erect position. The height was measured to the nearest 0.5m.

Skinfolds

Skinfold caliper was used to measure skinfolds. Two sites of sub-scapular and triceps were measured to determine the percent body fat of the students as described by Prentice (1997). The value was used to estimate the percent body fat of the students. Below is the procedure for determining percent body fat.

Calculating Percentage of Body Fat Using Skinfold Measurements

Purpose : To calculate percentage body fat using skinfold measures.

Procedure:. The triceps skinfold was measured over the right arm triceps muscle (back of the upper arm) halfway between the elbow and the tip of the shoulder.

- a. The students were instructed to let the arm hang limply at the side. The skinfold was grasped parallel to the vertical axis of the arm. The researcher lifted the skinfold away from the arm, and made sure that no muscle tissue was caught in the fold.
 - b. The contact surfaces of the caliper were placed $\frac{1}{2}$ inch (12mm) above the finders. The lever arm on the caliper was released and pressure was allowed from the instrument to the two sides together. The caliper pointer then indicated the skinfold thickness in millimetres (mm).
2. The subscapular (below the shoulder blade) measurement site was approximately $\frac{1}{2}$ inch (12mm) below the inferior angle of the scapula in line with the natural cleavage lines of the skin.
 - a. The students stood erect with shoulders thrust backward, arm at side. The point of the scapula (shoulder blade) towards the spine was obvious.
 - b. The researcher stood behind the students, used the thumb and index fingers and grasped the skinfold in the natural cleavage line. The skinfold was lifted from the scapula, and shaken to make sure no muscle tissue was caught in the fold. The measures were recorded on average basis.

Percentage body fat was calculated using the following equations.

Women: Percentage body fat = $0.55(A) + 0.31(B) + 6.13$

Where A = Triceps skinfold (mm)

B = Subscapular skinfold (mm)

Men: Percentage body fat = $0.43(A) + 0.58(B) + 1.47$

Where A = Triceps skinfold (mm)

B = Subscapular skinfold (mm)

Results

The results of the study are presented in table 1- 6

Table 1: Body Composition for Females Using Percent Body Fat

Participant	Age	Triceps	Subscapular	Percent Body fat	Referenced Standard	Rating
1	36	20	30	26.43	25-29.9	Fair
2	37	12	20	16.93	18-21.9	Good
3	38	10	15	16.28	12-17.9	Excellent
4	38	08	12	14.25	14-21.9	Excellent
5	38	15	20	20.58	18-21.9	Good
6	38	10	16	16.03	12-17.9	Excellent
7	39	15	20	20.58	18-21.9	Good
8	40	20	30	26.43	24-27.9	Fair
9	40	18	28	24.71	24-27.9	Fair
10	41	18	32	25.95	24-27.9	Fair
11	42	20	30	26.43	24-27.9	Fair
12	45	22	30	27.53	24-27.9	Fair
13	45	20	28	25.81	24-27.9	Fair
14	45	15	20	20.58	20-23.9	Good
15	45	20	30	26.43	24-27.9	Fair
16	50	1.9	25	24.33	21-24.9	Good
17	51	15	20	20.58	12-20.9	Excellent
18	52	22	30	27.53	25-30.9	Fair
19	55	20	32	27.05	25.30.9	Fair

Body Composition of Part-Time Students in University of Benin, Benin City, Nigeria

Table 1: Continues: Body Composition for Females Using Percent Body Fat

Participant	Age	Triceps	Subscapular	Percent body fat	Referenced Standard	Rating
20	40	20	30	26.43	24-27.9	Fair
21	39	18	28	24.71	22-24.9	Fair
22	36	15	20	20.58	18-21.9	Good
23	54	22	34	28.77	25-30.9	Fair
24	48	20	30	26.46	24-27.9	Fair
25	36	18	26	24.09	22-24.9	Fair
26	34	20	24	24.57	22-24.9	Fair
27	50	18	22	22.85	21-24.9	Good
28	42	18	24	17.34	12-19.9	Excellent
29	43	14	20	20.03	20-23.9	Good
30	49	10	20	17.83	12-19.9	Excellent

Table 2: Summary of Rating for Percent Body Fat Female Students

Frequency	Percentage	Rating
6	20.00	Excellent
8	26.67	Good
16	53.33	Fair

The data in table 1 and 2 indicate that many of the female part time students that took part in this study were below “Good” level in body composition as shown in table 2. 16 out of 30 of them were just fair in their rating as against 8 of them that were found good. The table also shows that 6 of the female part- time students have excellent body fat content.

Table 3: Body Composition for Males Using Percent Body Fat

Participant	Age	Triceps (mm)	Subscapular (mm)	Percent Body fat	Referenced Standard	Rating
1	35	7	12	11.44	11.13.9	Good
2	40	8	13	11.87	5-11.9	Excellent
3	41	9	10	11.14	5-11.9	Excellent
4	43	5	7	7.68	5-11.9	Excellent
5	44	6	10	9.70	5-11.9	Excellent
6	48	7	9	9.70	5-11.9	Excellent
7	54	8	12	11.87	5-12.9	Excellent
8	58	9	14	13.46	13-16.9	Good
9	47	5	11	8.53	5-11.9	Excellent
10	50	6	10	9.85	5-12.9	Excellent
11	45	6	13	11.59	5-11.9	Excellent
12	43	9	13	12.88	5-11.9	Good
13	35	10	14	13.89	5-10.9	Good

Table 4: Summary of Rating Percent Body Fat Male Students

Rating	Frequency	Percentage
Excellent	9	69.92
Good	4	30.08

Tables 3 and 4 showed that the male students, numbering 13 had adequate body composition when the values got were compared with that provided by Prentice (1997). Nine (9) of the participants were excellent while only four (4) had good rating.

Table 5: Skinfold Rating According to Age Category (Female)

Age (yrs)	Range Triceps	Sub-scapular	Percent body fat	Referenced standard	Rating
30 – 39	15.31	21.00	19.73	12-17.9	Good
40 – 49	21.67	23.78	24.00	24 – 27.9	Fair
50 and above	19.33	27.16	25.19	25 – 30.9	Fair

Tables 5 shows the results of skin fold measure of the female part-time students according to their age groups. It indicates that female students between the ages of 30 - 39 years had triceps skin-fold of 15.31mm, sub-scapular skin-fold of 21.00mm resulting in 19.73 percent body fat. When rated

Body Composition of Part-Time Students In University of Benin, Benin City, Nigeria

based on the standard set by Prentice (1997) the students were *good* in their percent body fat rating. Table 5 also shows that students between the ages of 40 - 49, had 21.67mm for triceps skin-fold, 23.78 for sub-scapular kin-fold while percent body fat was 24.00 The percent body fat rating was *fair*. The last category of female students based on age - 50yr and above had 19.33mm for triceps, as against 27.16mm for sub-scapular. Table 5 shows that the percent body fat is 25.19 and that the skin-fold rating is fair.

Table 6: Skinfold Rating According to Age Category (Male)

Age Range (mm)	Triceps (yrs)	Sub-Scapular (mm)	Percent body fat	Referenced standard	Rating
30-39	8.5	13	12.67	11-13.9	Good
40-49	10.88	10.75	10.41	5-11.9	Excellent
50 and above	7.67	12.00	11.73	5-12.9	Excellent

Table 6 shows skin-fold rating for different age categories. According to the results, the triceps skin-fold, sub-scapula skinfold and percent body fat for age categories of 30 - 39yr and 40 - 49yr are 8.5mm, 13mm, 12.67% and 10.88mm, 10.75mm and 10.41% respectively. Male students of 50yr and above had triceps skin-fold of 7.67mm, sub-scapula skin-fold of 12.00mm and percent body fat of 11.75.

Table 6 indicates that students between 30-39years of age had *Good* as their rating while those from 40 - 49years of age and 50years and above were *Excellent* in rating.

Discussion

This study has the work of Prentice (1997) as a standard reference point for determining levels of body composition. The results of this study revealed that female part-time students generally do not have proper body composition. Of the 30 female students measured, only 6 or 20% had excellent body composition, 8 of them representing 26.67% were just good in body composition rating while as much as 16 or 53.33% were just fair. It may probably be inferred that the females in this study are not as active as expected.

Male students were better in body composition. Out of the total of 13 male students 9, representing 69.92% were excellent in their body composition rating when it was compared with the result presented by Prentice (1997). Four of them or 30.08% were however below excellence. They rated “good”. Age was factor in the consideration and it is exactly as provided by Prentice (1997).

The study shows that the young females (30 - 31 yr) were better in body composition rating than the older ones, 40years and above. This may be because the younger females are still in their active years compared to the older ones who are perhaps beginning to rest from much work. The case is not the same with older male students who had rating of excellence as against good by the younger male students. The results suggest that the male part-time students probably live more active life than their female counterparts, hence their less fat composition.

Conclusion

The following conclusions were made based on the results of this study.

1. The female part-time students have a relatively average rating of body composition.
2. Male students appear to be more active than female students.
3. Male part-time students have a relatively high rating of body composition when considered in relation to Prentice (1997) standard.

Recommendations

The researcher recommends that school owners should provide facilities and equipment for physical and health education programmes so that students should be able to build and remain active with adequate body composition.

References

- Baumgartner, T. A. & Jackson, A.S. (1995). *Measurement for evaluation in physical education and exercise science*. Wisconsin: WCB Brown & Benchmark.
- Birsley, K. (1996). *Examining physical education*. Madrid Heinemann: Educational Publishers.
- Insel & Roth (2004). *Core concepts in health* (9th ed) New York: McGraw - Hill.
- Lohman, T.G. (1992). *Basic concepts in body composition assessment: Advances in body composition assessment*. Illinois: Human Kinetics.
- Paul, M.I. & Walton T.R. (2002). *Core concepts in health*. United State of America: McGraw-Hill Higher Education.
- Prentice, W.E. (1997). *Fitness for college and life*. St. Louis: Mosby Year Book. Inc.