

CHANGES IN BODY COMPOSITION OF COLLEGE FOOTBALL  
PLAYERS DURING FOUR VARYING TRAINING PROGRAMS

by

71  
349 5839

JOHN R. STUCKY

B.S., KANSAS STATE UNIVERSITY, 1971

---

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree


MASTER OF SCIENCE

Department of Health, Physical Education, and Recreation

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1973

Approved by:

  
Major Professor

LD  
2668  
R4  
1973  
S83  
C.2  
Document

TABLE OF CONTENTS

1. INTRODUCTION . . . . .	1
Statement of Purpose	
2. REVIEW OF LITERATURE . . . . .	4
History of Background	
General Review of Studies	
3. METHODS AND PROCEDURES . . . . .	14
Subjects	
4. RESULTS AND DISCUSSION . . . . .	20
5. SUMMARY AND CONCLUSIONS . . . . .	23
BIBLIOGRAPHY	
APPENDIX I: Abdominal Skinfold . . . . .	37
APPENDIX II: Triceps Skinfold . . . . .	38
APPENDIX III: Chest Skinfold. . . . .	39
APPENDIX IV: Specific Gravity . . . . .	40
APPENDIX V: Percent of Body Fat . . . . .	41
APPENDIX VI: Body Weight . . . . .	42
APPENDIX VII: Total Body Strength . . . . .	43
APPENDIX VIII: Height . . . . .	44
APPENDIX IX: Spearman's Rank Order Correlation Coefficient . . . . .	45

**THIS BOOK CONTAINS  
NUMEROUS PAGE  
NUMBERS THAT ARE  
ILLEGIBLE**

**THIS IS AS RECEIVED  
FROM THE  
CUSTOMER**

## Chapter 1

### INTRODUCTION

The study of man's body composition has become the topic of much recent research. In the past it was thought by many that high body weight was a sign of good health, especially in children. But recent studies have indicated that many physical problems associated with body fat are causes of diseases. This, and the cosmetic value of leanness, has made the problem one of great importance to the American public. Overabundance of body fat is now one of the major causes of degenerate diseases of the heart. Degenerative heart disease overshadows all other causes of death in this country.<sup>1</sup>

Body fat is a problem for major college football players as well as the general public. With the great amount of emphasis that is now being placed on major college football programs, it is attracting many physically exceptional individuals and requiring them to go through many different and demanding types of training programs. When involved in these types of training programs, it is very important to limit and restrict or sometimes change the body composition or per cent of body fat of the individual. The individuals involved in these programs are quite often of massive muscular structure and weight with a low amount of body fat. It is not uncommon for university varsity lines to average more than 225 pounds per man. The demanding programs that are conducted during the year are to prepare individuals for the game itself which requires superbly conditioned athletes who can endure the bruising bodily contact of blocking and tackling, and also be very agile and swift a foot.<sup>2</sup> The effectiveness of an individual in performing these required tasks can be hampered to a great degree by an excess

of body fat. This study attempts to examine the changes and variations, if any, in body weight, fat, and bodily composition that occur in major college football players during four varying types of training periods.

#### Statement of Purpose

The purpose of this study was to determine whether there were significant changes or variations in body weight, fat, and bodily composition resulting from four varying training periods. Secondary intentions of the study were to show the relationships between the eight variables tested and also the relationships between the results of the programs and individuals examined in this study, great insight can be gained and thereby used in organizing more efficient training programs for athletes.

## Footnotes

<sup>1</sup>Kraus and Raab, pp. 3-5.

<sup>2</sup>Thompson, C. W. "Changes in Body Fat, Estimated from Skinfold Measurements of Varsity College Football Players During a Season, Research Quarterly, Vol. 30, No. 1, p. 88-93, 1958.

## Chapter 2

### REVIEW OF LITERATURE

#### History of Background

In this study it was necessary to review material that would present some of the information and studies that have been conducted and researched in the area of determining body composition or body fat.

Historically, the first quantitative measurements of skinfold thickness with a caliper was made by a Frenchman by the name of Richer as early as 1890.<sup>3</sup> He was also the first to use pinching of a skin fold with the fingers as a caliper to survey "nutritional status" of an individual.<sup>4</sup> Richer in the same year of 1890 described what was probably the first calipers used for the measurement of skinfold thickness in man.<sup>5</sup>

From this early beginning many individuals used and experimented with numerous types, sizes, and shapes of calipers for work done in the area of body composition and the measurement of body fat.

However, most of the very early work done in this area was done with anthropometric measures such as height and weight. These early measures resulted in the height and weight charts such as the one developed by the Metropolitan Life Insurance Company.<sup>6</sup> These charts were soon challenged by Behnke and others.<sup>7</sup> The inadequacy of the charts was readily brought out, and as early as 1942 they were said to be invalid measurements of leanness and fatness among man. Behnke and others established that the common practice of assessing the degree of obesity or body composition of an individual with a high total body weight having a high percentage of lean body mass