

A Comparative Study of
Male and Female Intercollegiate
Team Sport Athletes

by
Anthony L. Sanford

Presented to the School of Education
California State College, Bakersfield, California
in partial fulfillment
of requirements for the degree of
Master of Arts in
Education

June 1975

APPROVED BY SUPERVISORY COMMITTEE:

John N. Sage
Advisor, committee

Sam D. W. Tuttle
Member

James A. Larson
Member

TABLE OF CONTENTS

Chapter		
I.	INTRODUCTION	1
II.	REVIEW OF LITERATURE	3
	Summary	12
III.	DESIGN AND PROCEDURES	13
	Subjects	13
	Apparatus	13
	Definitions	14
	Design Procedures	17
	Hypothesis to be Tested	18
	Data Analysis	18
IV.	DATA ANALYSIS	19
V.	CONCLUSION	26
	
	APPENDIX	28
	BIBLIOGRAPHY	32

LIST OF TABLES

I. Comparison of Observed Mean Scores of Male and Female Team Sport Athletes
Part A 19
Part B 19

II. Comparison of Predicted and Observed Mean Scores of Male Team Sport Athletes
Part A 23
Part B 23

III. Comparison of Predicted and Observed Mean Scores of Female Team Sport Athletes
Part A 24
Part B 25

CHAPTER I

INTRODUCTION

The recent ruling of the National Collegiate Athletic Association on the equality of women's intercollegiate athletic sport and the Federal Title IX Bill have brought increasing attention to women athletes and their athletic programs. In partial response to these decisions, some significant changes are taking place in athletic programs on college and university campuses: increased expansion of sport offerings for women, increasing funding of these programs, and the coeducation of what have traditionally been male sports. Along with these, there is a developing interest in the nature of female athletes.

Studies and tests have been conducted over the years dealing with such characteristics as performance, personality and physiological traits of male athletes. Attention is now being directed toward the study of similar concerns with regard to female athletes. In addition, comparative studies of male and female athletes are now being undertaken.

It is the purpose of this study to compare the personality traits of male and female athletes involved in intercollegiate team sport, using a selected group of male and female intercollegiate athletes involved in team sport at Chapman College, Orange, California.

Significant differences and similarities found in the personality traits of the two groups are analyzed.

This study in part deals with the personality traits of college women athletes. Consequently, it will add to the total body of knowledge relating to women athletes. In addition, the study will augment the existing information dealing with the personality traits of male athletes and will increase what is known about athletes participating in intercollegiate team sport as opposed to individual sport athletes. The results of the study will also aid in the development of the Chapman College intercollegiate athletic program by discerning important personality characteristics of its athletes.

It was hypothesized that there would be no significant differences between the female and male intercollegiate team sport athletes' personality traits. Using the 16 Personality Factor Questionnaire as the criterion measure, it was further hypothesized that the self-predicted mean score of each of the 16 personality factors would be similar to the actual test scores.

CHAPTER II
REVIEW OF LITERATURE

Considerable work has been done in studying the psychological and personality traits of athletes. The vast majority of the studies conducted to date have dealt with male athletes and male athletic programs. Very few studies have dealt with male and female athletes involved in team sports. Therefore, in reviewing the related literature, the broad area of personality measurement has been examined and divided into two categories: the personalities of male and/or female athletes and research on the characteristics of athletes utilizing Cattell's 16 PF Questionnaire as the tool for personality measurement.

Seven hundred sportsmen and sportswomen measured by Rushall¹ were found to include a variety of personality types. Rushall suggested that, when compared to individual sport participants, individuals who participate in team sports were more extroverted, socially bold, unrestricted, group oriented, and dependent. On the other hand, those involved in individual sports appeared to be more self-centered, introspective, and independent.

¹B.S. Rushall. "The Analysis of the Personality of a Football Squad and Suggestions for Utilizing Findings." (Paper for the Athletic Department, University of Indiana, 1967.)

Hendry² measured the personality profiles of 126 male and female swimmers ages fourteen through twenty-two and fifty-six coaches age twenty-four through fifty-six at the 1966 Amateur Swimming Association National Championships. He found that the coaches accurately perceived their swimmers' intelligence, emotional stability, assertiveness, realism, and self-sufficiency, as measured by Cattell's 16 PF.

Peterson, Weber, and Trousdale³ conducted a study to determine if there were distinguishing personality traits between women who compete in individual sports and those who compete in team sports. The results of the study indicated that women athletes engaged in individual sports are high in such personality traits as dominance, self-sufficiency, and impulsiveness whereas women engaged in team sports showed themselves less self-absorbed and introverted. The individual sport athletes were found to have a higher degree of emotional, artistic and creative interests; team sport athletes were emotionally disciplined, less affected by fads and tended to generate group solidarity. Both groups were a little more serious than the average and tended to express themselves less freely. These women were intellectually brighter, more conscientious, aggressive, and persevering than the national norms as measured by the 16 PF.

²L.B. Hendry. "Assessment of Personality Traits in the Coach-Swimmer Relationships, and a Preliminary Examination of the Father-figure Stereotype." Research Quarterly, 39 (1968): 543-555.

³S.L. Peterson, Weber, J.C., and Trousdale, W.W. "Personality Traits of Women in Team Sports vs. Women in Individual Sports." Research Quarterly, 38 (1967): 686-690.

Malumphy⁴ described and compared personality and background of women in intercollegiate sports competition. The 16 PF Questionnaire and Parsons Information Questionnaire were administered to four groups of junior and senior college women. The individual and subjectively judged groups were more alike and also more similar to the non-participants than to the other two groups. Team and team-individual groups tended to be alike,

Mushier⁵ investigated personality factors of girls and women involved in competitive lacrosse. Results indicated significant difference on one or more personality factors between the sample and the norms. The total competitive lacrosse groups were found to be more reserved, intelligent, assertive, happy-go-lucky, toughminded, and experimental than the norms.

Brown⁶ compared seventy-nine male wrestlers who were divided into two groups according to their competitive aggressiveness rated by the coaches and wrestlers themselves. Using the Edwards Personal Preference Schedule, he concluded that the wrestlers who were rated high in competitive aggressiveness were more aggressive than those rated low.

⁴T. M. Malumphy. "Personality of Women Athletes in Intercollegiate Competition." Research Quarterly, 39 (1968): 610,620.

⁵C.L.A. Mushier. "A Cross-Sectionally Study of the Personality Factors of Girls and Women in Competitive Lacrosse." (Doctoral Dissertation, University of Southern California, Los Angeles.) 1970.

⁶Edward A. Brown. "Personality Characteristics of Wrestlers." (Master's Thesis, University of Minnesota.) 1958.

Rushall⁷ analyzed the relationship between personality and success in male football teams. The 16 PF Questionnaire was used to assess the starting football teams at Indiana University 1966-1968. Rushall concluded that no significant relationship existed between the personality traits and the group classification: football teams.

Nelson and Langer⁸ found similar profile patterns among athletes on the mens' freshmen and varsity basketball teams using the Taylor Manifest Anxiety Test. They concluded that the higher the athlete progressed in organized athletics, the more intensified the traits became.

Booth⁹, using the Minnesota Multiphasic Personality Inventory (MMPI) compared the personality ratings of 1) freshmen and upper-class athletes and non-athletes; 2) freshmen and varsity athletes who participated in only team, individual or team and individual sports, and; 3) athletes who were rated as poor or good competitors. It was determined that differences in personality as measured by the MMPI do exist between athletes and non-athletes and between individual and team sports. It was also concluded that varsity athletes scored significantly higher on dominance than freshmen athletes and significantly lower on anxiety.

⁷B.S. Rushall. "Analysis of the Relationship between Personality and Success in Football Teams." (Unpublished Manuscript), 1968.

⁸D. Nelson and Langer, P. "Getting to Really Know Your Players." Athletic Journal, 44 (1963): 88-93.

⁹E.G. Booth. "Personality Traits of Athletes as Measured by the MMPI." Research Quarterly, 29 (1958): 127-138.

Ogilvie, Tutko and Young¹⁰ found Olympic swimmers to be more emotionally stable, aggressive, and tough-minded than the normal college population. In another study of individual competitors, Kane¹¹ concluded that sixteen- to nineteen-year old British male athletes were more tough-minded, dominant, self-assertive, aggressive, and shrewd when compared to non-athletes.

Ogilvie¹² measured the personality of 280 college and professional basketball players, 929 swimmers, twenty-eight water poloists, 121 Air Force Academy athletes representing seven sports, 197 high school, college, and professional race drivers. He summarized that as a group the male athletes exhibited a great achievement need, dominance need, greater psychological endurance and a higher need for aggression. Top competitors were more venturesome, bold, and tough-minded. In addition they were found to be more placid, self-assured, and self-sufficient. They had a need to dominate with a strong preference for doing things their own way. Self-discipline ranged from average to high in the various athletic populations.

Kroll¹³ studied seventy-one male karate participants. The subjects

¹⁰B.C. Ogilvie, Tutko, T.A. and Young, I. "The Psychological Profile of Olympic Champions: A Brief Look at Olympic Medalists." (Presented to the First International Congress of the Psychology of Sports, Rome.) 1965.

¹¹J.E. Kane. "Personality and Physique of Athletes." Physical Recreation, (1160):34.

¹²Ogilvie, Bruce C. and Johnsgard, Keith M. "The Personality of the Male Athlete." Academy Paper of the American Academy of Physical Education, 1 (1967):45-52.

¹³Walter Kroll and Carlson, R. "Discriminate Function and Hierarchical Grouping Analysis of Karate Participants' Personality Profiles." Research Quarterly, 33 (1967):405-411.

were gathered from a karate tournament and clinic with teams representing five male karate clubs from several colleges and athletic groups. It was concluded that there were no significant differences between levels of karate participation and proficiency; participants did not differ from established norms.

Brown¹⁴, using the Edwards Personal Preference Schedule, measured the personality traits of three hundred male subjects including varsity skiers, varsity wrestlers, varsity swimmers, and collegiate non-athletes. From the study, he concluded that varsity skiers tended to have greater inner stability and did not appear to need encouragement, sympathy, understanding or affection from other people to the same degree that the varsity wrestlers, varsity swimmers, and collegiate non-athletes did. The varsity wrestlers were generally more structured, less adventuresome, and more rigid than all of the other groups studied. Generally on the other variables, with the exception of introversion, autonomy, and nurturance, the groups had similar mean scores and profile patterns.

The studies cited above deal with male and/or female athletes. A variety of test instruments were used in these studies. The remaining studies all utilized the 16 PF Questionnaire as the test instrument. They deal with non-athletes as well as athletes.

¹⁴Edward A. Brown. "A Comparative Study of Personality Traits of Varsity, Wrestlers, Varsity Swimmers, and Collegiate Non-Athletes at Selected Institutions of Higher Learning in the Intermountain Area." (Doctoral Dissertation, University of Utah) 1969.

Heusner¹⁵ pioneered the use of the 16 PF in athletic personality research and it has since become the assessment tool of choice. When comparing forty-one British and American male track and field competitors with nationally established norms, Heusner discovered that athletes were more emotionally stable, more dominant and assertive, more bold, placid and uninhibited. It was further concluded that the athletes exhibited a higher degree of extroversion and lower anxiety levels than the normative group.

McClenney¹⁶ divided college men into those who were physically fit and those who were unfit and found that only trust (Factor L) distinguished their personalities by showing that the physically fit men were more trusting.

Garvin¹⁷ conducted a study to determine if there was a significant relationship between physical fitness and personality. One hundred eighty-nine male volunteers from Mississippi Gulf Coast Junior College were studied. From the results of the study, it was concluded that there was a high correlation between personality and physical fitness. Significant differences in personality between high, average, and low physically fit groups were found.

¹⁵L. Heusner. "Personality Traits of Champion and Former Champion Athletes." (Master's Thesis, University of Illinois, Champaign, Illinois, 1951.)

¹⁶B.N. McClenney. "A Comparison of Personality Characteristics, Self-Concepts, and Academic Aptitude of Selected College Men, Classified According to Performance on a Test of Physical Fitness." (Doctoral Dissertation, University of Texas, Austin, Texas, 1969.)

¹⁷B.S. Garvin. "An Investigation into the Relationship of Personality and Physical Fitness." (Doctoral Dissertation, University of Southern Mississippi, Hattiesburg, Mississippi, 1972.)

A study by Slaughter¹⁸ was undertaken to compare the personality traits of women with the somatotype ratings as established by Sheldon. The personality profiles were determined by Cattell's 16 PF Questionnaire and the California Psychological Inventory. Only the hypothesis that the component of mesomorphy would be significantly correlated with the Low Ergic Tension Factor of the 16 PF was supported.

Using the 16 PF, Werner and Gottheil¹⁹ measured a group of 340 athletes and 116 non-participants at the U.S. Military Academy. The group designated as athletes scored significantly higher on the following variables: they were more warm and sociable, enthusiastic and talkative, adventurous, and tense and excitable.

In another study, Kroll²⁰ studied ninety-four amateur and collegiate wrestlers. He found no significant differences in profile patterns at different levels of demonstrated achievement in wrestling. When compared with standardized norms for a similar age grouping, the wrestlers demonstrated a significant departure from the average indicating greater tough-mindedness, self-reliance and masculinity.

In studying English pro soccer, Kane²¹ found six general factors which accounted for nearly all of the variance between the soccer

¹⁸M.H. Slaughter. "An Analysis of the Relationship between Somatotype and Personality Traits of College Women." Research Quarterly, 41 (1970):569-575.

¹⁹A.C. Werner and Gottheil, E. "Personality Developments and Participation in College Athletics." Research Quarterly, 37 (1966): 126-131.

²⁰Walter Kroll. "Sixteen Personality Factor Profiles of Collegiate Wrestlers." Research Quarterly, 39 (1967):49-58.

players and the general population. These factors, in order of importance and contribution, were labeled by Kane as: a) emotional integration, encompassing self control and emotional stability; b) extroversion--a tendency to be surgent, happy-go-lucky, and enthusiastic; c) tough mindedness, d) ruthlessness and cunning, e) radicalism, and f) general intelligence.

Ogilvie²² reported that service academy cadets, who were selected for academic ability and at least moderate athletic ability, were more intelligent, emotionally stable, tough-minded, self-assured, self-controlled, and less anxious than the college population norms.

Meredith and Harris²³ administered the 16 PF to college women in beginning swimming, basic movement, tennis and golf courses. The swimmers were more introverted than the other females enrolled in other courses.

Foster²⁴ investigated the personality traits of highly skilled basketball and softball women athletes. A secondary purpose was to ascertain the women athletes' view of self using the 16 PF. The study concluded that basketball and softball players were differentiated only on the Factor Desurgency-Surgency. Inter-collegiate and non-collegiate women athletes displayed different personality structures.

²²V.C. Ogilvie, Tutko, T. and Lyon, L. Athletic Motivational Inventory (Handbook, San Jose State College, Institute for the Study of Athletic Motivation, 1968.)

²³Gerald M. Meredith and Marjorie M. Harris. "Personality Traits of College Women in Beginning Swimming." Perceptual and Motor Skills, (1969) 29 (1):216-218.

²⁴E.G. Foster. "Personality Traits of Highly Skilled Basketball and Softball Women Athletes." (Doctoral Dissertation, University of Indiana, Bloomington, Indiana, 1972.)

Finally, the study indicated that sports participation does play a role in the highly skilled athlete's view of self.

SUMMARY

This review of literature demonstrates that there is a sound theoretical base for dealing with the personality characteristics of athletes. Most of the studies dealt with male athletes: athletes and non-participants, personality of athletes in particular sports, comparison studies between athletes in different sports. The literature dealing with women athletes is much less diverse and more narrow in scope. However, it does indicate that there is a need for the study of female athletes and their personality traits.

No research was found that dealt with the stated purpose of this study: the comparison of the personality traits of male and female team sport athletes. However, the research cited is helpful in giving direction and providing background information for this study.

Generally, the studies cited tend to indicate that athletes both in team and individual sport are more emotionally stable and realistic than the non-athletic population. They are also more assertive, self-sufficient and dominant than the norm. Many studies indicate that athletes are more intelligent and more adventurous than non-athletes. Personality differences are found between participants in various sports, particularly team-sport versus individual sport. Studies indicate team sport athletes are more extroverted, dependent and group oriented than the individual sport athletes; the latter are more self-centered, independent, dominant and more artistic and creative.

CHAPTER III
DESIGN AND PROCEDURES

Subjects

Fifty intercollegiate team sport athletes from Chapman College served as subjects for this experiment. The subjects were divided into two groups: one group of twenty-five men and one group of twenty-five women. All athletes were eighteen to twenty-three years old at the time of the study. Team sport athletes were defined for the purpose of this study as members of the men's basketball and baseball intercollegiate varsity teams and the women members of the intercollegiate basketball and softball teams.

Apparatus

After a thorough investigation of personality and behavior inventories was made, Cattell's 16 Personality Factor Questionnaire was selected for use in this study. Cattell states that

"...during its two decades of growth, the reliabilities and validities of the 16 PF have steadily advanced, and the test has expanded into no fewer than six parallel forms yet retaining the essential shape of the original. The 16 PF is constant because from the beginning it was tailored to evidence the inherent structures of personality, not artificially created to fit a prior concept."²⁵

The test measures sixteen multi-dimensional factors affecting large areas of the overt personality behavior such as intelligence,

²⁵Cattell, Raymond B., Herbert W. Eber, Maurice M. Tatsuoka. Handbook for the Sixteen Personality Factor Questionnaire (16 PF). (Champaign, Illinois: Institute for Personality and Ability Testing, 1970.) p. 7.

emotional stability, superego strength, surgency, and dominance.²⁶
It represents one of the quickest ways to measure personality factors comprehensively and with good reliability.

The 16 PF is distinguished from other adult questionnaires in that it is firmly based on the personality sphere concept -- a design to insure initial item coverage for all behaviors that commonly enter ratings.²⁷

Cattell's 16 PF consists of 187 statements. The subject is asked to choose the response which characterizes him the best for each of the statements. It takes forty-five to fifty-five minutes for an average reader to complete. The questionnaire was constructed to eliminate the "tendency-to-agree" by equalizing the number of items for which "yes" or "no" answers contribute positively to the score on each factor. The "forced-choice format," which forbids the middle category, was eliminated because this frustrates the subjects' genuine attempts to give accurate answers, and may produce poor test morale and a general disinclination to respond to the test carefully.²⁸

Definitions

Group I. The 25 male intercollegiate team sport athletes (basketball and baseball.)

Group II. The 25 female intercollegiate team sport athletes (basketball and softball.)

²⁶ Ibid.

²⁷ Ibid., p. 16.

²⁸ Ibid., p. 23.

Personality. That which tells what a man will do when placed in a given situation.²⁹

Personality Profile. A personality sketch utilizing the measurable and specific personality traits of the individual as taken from Cattell's 16 PF Questionnaire.

Personality Traits. The variables that are measurable and specific and involve the total personality.³⁰

16 Personality Factor Questionnaire (16 PF). This is an analytically developed questionnaire designed to measure the human personality comprehensively. The 16 PF traits include the following:

Factor A.

Sizothymia. Reserved, detached, critical, aloof, still.
(Low score description)

Affectothymia. Warmhearted, outgoing, easygoing, participating
(High score description)

Factor B.

Lower Scholastic Mental Capacity. Less intelligent, concrete thinking.
(Low score description)

Higher Scholastic Mental Capacity. More intelligent, abstract thinking, bright.
(High score description)

Factor C.

Lower Ego Strength. Affected by feelings, emotionally less stable, easily upset.
(Low score description)

Higher Ego Strength. Emotionally stable, faces reality, calm, mature.
(High score description)

Factor E.

Submissiveness. Humble, mild, accommodating, conforming, obedient, docile.
(Low score description)

Dominance. Assertive, aggressive, stubborn, competitive.
(High score description)

²⁹Raymond B. Cattell. The Scientific Analysis of Personality. (Chicago: Aldine, 1965) p. 25.

³⁰Bruce C. Ogilvie, T. Tutko, "Some Psychological Traits of the Successful Coach." (Unpublished Manuscript, San Jose State College: Institute for the Study of Athletic Motivation, 1966) p. 1968.

Factor F.

Desurgency. Sober, prudent, serious, taciturn. (Low score description)

Surgency. Happy-go-lucky, impulsively lively, gay, enthusiastic. (High score description)

Factor G.

Weaker Superego Strength. Expedient, disregards rules, feels few obligations. (Low score description)

Stronger Superego Strength. Conscientious, persevering, staid, moralistic. (High score description)

Factor H.

Threctia. Shy, restrained, timid, threat-sensitive. (Low score description)

Parmia. Venturesome, socially bold, uninhibited, spontaneous. (High score description)

Factor I.

Harria. Tough-minded, self-reliant, realistic, no-nonsense. (Low score description)

Premisia. Tender-minded, clinging, over-protected, sensitive. (High score description)

Factor L.

Alaxia. Trusting, adaptable, free of jealousy, easy to get along with. (Low score description)

Protension. Suspicious, self-opiniated, hard to fool. (High score description)

Factor M.

Praxemia. Practical, careful, conventional, regulated by external realities, proper. (Low score description)

Autia. Imaginative, wrapped up in inner urgencies, careless of practical matters, Bohemian. (High score description)

Factor N.

Artlessness. Forthright, natural, artless, unpretentious. (Low score description)

Shrewdness. Shrewd, calculating, worldly, penetrating, astute. (High score description)

Factor 0.

Untroubled Adequacy. Self-assured, confident, serene, secure.
(Low score description)

Guilt Proneness. Apprehensive, self-reproaching, worrying,
troubled, insecure. (High score description)

Factor Q₁.

Conservatism. Conservative, respect established ideas,
tolerant of traditional difficulties. (Low score description)

Radicalism. Experimenting, liberal, analytical, free-thinking.
(High score description)

Factor Q₂.

Group Adherence. Group-dependent, a "joiner" and sound
follower. (Low score description)

Self-sufficiency. Self-sufficient, prefers own decisions,
resourceful. (High score description)

Factor Q₃.

Low Integration. Undisciplined self-conflict, follows own
urges, careless of protocol, lax. (Low score description)

High Self-Concept Control. Controlled, socially precise,
following self-image, exacting will power. (High score description)

Factor Q₄.

Low Ergic Tension. Relaxed, tranquil, unfrustrated, composed.
(Low score description)

High Ergic Tension. Tense, frustrated, driven, over-wrought.
(High score description)

Design Procedures

The basic dimensions of the study included: the selection of an appropriate instrument to determine the personality traits of the participants the self-prediction of the personality profile by each athlete prior to testing. Comparison of the differences between the tested Chapman College students' norms and national collegiate norms was a final dimension.

A comparative study was selected as being the most appropriate. External validity was not considered important because the population

sample was small, thereby precluding inference to larger populations. The nature of the study undertaken was explained to all subjects. They were given a brief verbal description of the 16 PF, then were asked to predict their own personality profile. The 16 PF Questionnaire was then administered to each of the fifty subjects.

Hypothesis to be Tested

It was hypothesized that there would be no significant differences in personality traits between the female and male intercollegiate team sport athletes. It was further hypothesized that the self-predicted mean score of each of the sixteen personality factors would be similar to the actual test scores on Cattell's 16 PF Questionnaire.

Data Analysis

The hypothesis was tested by use of a "t" test for differences in samples with a small number. The .05 level of significance was accepted as the criterion level for statistical significance. Since the "t" test gives a measure of the standard error of the difference between means, it was also used to evaluate differences between predicted and observed scores.

In this study, a pair of samples, male and female team sport athletes, was drawn. The completed "t" test scores took the difference between the means of each pair on each personality factor and obtained a distribution of these differences.³¹ The level of significance for a two-tailed test is 2.02.

³¹Richard P. Runyon and Audrey Haber. Fundamentals of Behavioral Statistics. (Reading, Mass.: Addison-Wesley, Publishing Co., 1968) p. 158.

CHAPTER IV

DATA ANALYSIS

TABLE I

Comparison of Observed Mean Scores of
Male and Female Team Sport Athletes (Part A)

Factor	A	B	C	E	F	G	H	I
Male	5.36	5.40	6.04	5.96	5.56	5.52	5.92	6.28
Female	4.61	5.44	6.27	6.61	5.54	6.50	5.38	5.22
"t" test score	1.36	0.07	-0.37	-1.13	0.19	-1.79	0.83	2.26

Comparison of Observed Mean Scores of
Male and Female Team Sport Athletes (Part B)

Factor	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
Male	5.32	5.24	5.72	5.52	6.12	5.96	6.00	4.88
Female	6.11	5.72	5.44	5.77	7.05	5.72	6.22	5.50
"t" test score	-1.31	-0.90	0.60	-0.38	-1.76	0.45	-0.39	-1.21

Table I, Parts A and B and Figure 1 (see Appendix) include the observed mean scores for each personality factor for male and female team sport athletes. The "t" test score, indicating the standard error

of the difference between means for each factor, is also included on Tables I-A and I-B.

Comparison of Factor A mean scores for male and female athletes indicated that men are slightly more outgoing and participating. The "t" score, 1.36 did not indicate a significant difference between means.

The "t" score, -0.07, on Factor B indicated a very slight but insignificant difference between means. A comparison of mean scores also indicated that women athletes were only slightly less intelligent than were the men. This difference, however, was not significant.

Male and female scores were very similar on Factor C. Women tended to be more emotionally stable while the men were more affected by feelings. The "t" score, -0.37, reflects the slight, but insignificant, variation in means.

Factor E, which is the submissive-dominance personality trait, had a "t" score of -1.13. The difference between mean scores showed that the women athletes were somewhat, but not significantly, more assertive than the men.

Comparison of Factor F mean scores for male and female team sport athletes shows that the two were very similar; both were close to the average on the personality factor sober - happy-go-lucky. The differences were statistically insignificant. The "t" score, 0.19, reflected this similarity of means.

The mean scores on Trait G, expedient vs. conscientiousness, were within the average range for both men and women. The "t" score was -1.79. Although this is the second largest "t" score for all personality factors, it is nonetheless insignificant.

The "t" score for Trait H was 0.83. This reflected the close similarity of means for men and women team sport athletes. Men scored more toward venturesome, socially bold and uninhibited while the women were more shy, timid and threat sensitive. Again, the differences were statistically insignificant.

Trait I, with a "t" score of 2.26, proved to be the only trait with significant differences between men and women. The women were more tough-minded, self-reliant, and realistic while the men's scores indicated they were more tender-minded, sensitive, clinging and over-protected. Both, however, are close to average scores.

Comparison of means on Trait L indicated that the females tested were more suspicious and hard-to-fool while the male athletes were more trusting, understanding and tolerant. The "t" score was -1.31; an insignificant difference.

The "t" score on Trait M was -0.90. Women scored somewhat higher, but not significantly different, than did men. This indicated that women were more imaginative and absent-minded while men were concerned with more practical and down-to-earth matters.

Factor N had a "t" score of 0.60. Comparison of the means showed that men tended to be somewhat more socially aware, astute and polished while women were more unpretentious and forthright with a higher degree of spontaneity. Again, the scores indicated there was no significant difference.

The mean scores on Trait O indicated that women were slightly more apprehensive, self-reproaching and insecure. The "t" score was low, -0.38. The differences in scores for men and women were not significant.

Mean scores on Trait Q₁ showed that women were more experimental, liberal and freethinking than the men. Mean scores for both men and women were above the average. The "t" score was -1.76, which is an insignificant score.

Trait Q₂, with a "t" score of 0.45, showed that the male athletes were more self-sufficient, resourceful and preferred their own decisions. Female athletes were more group dependent, but not significantly different from the male athletes.

Mean scores on Trait Q₃ showed that men were on the outer limit of the average, while the women's mean score was above average. Women tended to be slightly more controlled. The differences between the two groups were not significant since the "t" score was low, -0.39.

Comparison of mean scores on Trait Q₄ indicated that women were more frustrated, tense and over-wrought. The "t" score, -1.21, was insignificant.

The fact that only one of the sixteen personality factors, tough-mindedness vs. tender-mindedness was significant, means that the results generally supported the null hypothesis. The mean scores on the remaining fifteen personality factors were very similar. Thus, with the exception noted above, no significant difference between the personality traits of the male and female team sport athletes tested in this investigation were found.

The results of comparing observed and predicted mean test scores for each group varies somewhat from those above. This is detailed below.

TABLE II

Comparison of Predicted and Observed Mean Scores
of Male Team Sport Athletes (Part A)

Factor	A	B	C	E	F	G	H	I
Predicted score	7.08	7.28	7.16	7.20	6.96	6.96	6.16	4.52
Observed score	5.36	5.40	6.04	5.96	5.56	5.52	5.92	6.28
"t" test score	4.19	4.19	2.33	3.06	4.36	4.04	-0.78	-4.86

Comparison of Predicted and Observed Mean Scores
of Male Team Sport Athletes (Part B)

Factor	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
Predicted score	4.92	4.96	6.08	5.02	6.36	7.56	6.56	5.04
Observed score	5.32	5.24	5.72	5.52	6.12	5.96	6.00	4.88
"t" test score	-0.85	-0.54	0.73	-1.25	0.42	2.87	1.31	0.36

Table II, Parts A and B and Figure 2 (see Appendix) include a comparison of the predicted and observed mean scores on each personality factor for male athletes. The standard error of the difference was shown to be significant on eight of the sixteen factors tested. Those eight traits and their "t" scores were Trait A, reserved, vs. outgoing, "t" = 4.19; Trait B, less intelligent vs. more intelligent, "t" = 4.19; Trait C, affected by feelings vs. emotionally stable, "t" = 2.33; Trait E, humble vs. assertive, "t" score = 3.06; Trait F, sober vs.

happy-go-lucky, "t" = 4.36; Trait G, expedient vs. conscientious, "t" = 4.04; Trait I, tough-minded vs. tender-minded, "t" = -4.86. A minus score indicated that the male athletes underestimated themselves. The final trait, Q₂, group dependent vs. self-sufficient had a "t" score of 2.87.

The results indicated that the male athletes were only able to predict the mean scores on fifty percent of the tested traits, i.e., eight of the sixteen t-ratios were significant. The results also showed that they were more likely to overestimate their predictions (twelve out of sixteen) while they underestimated only four traits.

Comparison of predicted and observed mean scores for the female athletes differed somewhat from those of the men. This is show below.

TABLE III

Comparison of Predicted and Observed Mean Scores
of Female Team Sport Athletes (Part A)

Factor	A	B	C	E	F	G	H	I
Predicted score	7.55	7.22	5.72	7.00	7.27	7.33	6.44	5.55
Observed score	4.61	5.44	6.27	6.61	5.54	6.50	5.38	5.22
"t" test score	4.80	3.50	-0.97	0.80	3.33	2.01	2.96	0.72

Comparison of Predicted and Observed Mean Scores
of Female Team Sport Athletes (Part B)

Factor	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
Predicted score	5.22	5.22	6.38	6.27	6.44	6.16	6.44	5.88
Observed score	6.11	5.72	5.44	5.77	7.05	5.72	6.22	5.50
"t" test score	-2.35	-1.49	1.50	0.75	-1.16	0.84	0.39	0.70

Table III, Parts A and B and Figure 3 (see Appendix) include a comparison of the predicted and observed mean scores on each personality factor for the female athletes tested. The standard error of the difference was shown to be significant on five of the sixteen traits. Those five traits and their "t" scores were: Trait A, reserved vs. outgoing, "t" = 4.80; Trait B, less intelligent vs. more intelligent, "t" = 3.50; Trait F, sober vs. happy-go-lucky, "t" = 3.33; Trait H, shy vs. venture-some, "t" = 2.96, and finally Trait L, trusting vs. suspicious, "t" = -2.35. A minus score indicated that the female underestimated the score. The results show that the females were also more likely to overestimate their scores (twelve out of sixteen), while they underestimated only four traits.

As Figure 4 (see Appendix) indicates, the athletes tested tended to score within the range of the national norms. Only three traits differed more than 0.5 from the norm. All were scored by women athletes who proved to be more assertive, conscientious and experimenting than the average college student. The other differences between the mean scores of the Chapman students and the national norms were slight; the t-ratio ranged from 0.04 to 0.39.

CHAPTER V

CONCLUSION

With the exception of one factor, the results of this study indicated in Table I and Figure 1 support the null hypothesis that there are no significant differences between the personality traits of male and female team sport athletes. Of the fifty athletes tested using Cattell's 16 PF, only one trait was found to differ significantly, that being Trait I, toughminded vs. tenderminded. It was interesting to note, however, that many results were contrary to what is commonly thought about male and female athletes and their personalities. Female scores indicated they were more assertive, emotionally stable, experimenting and controlled than male athletes. These differences, however, were not significant.

Tables II and III and Figures 2 and 3 depict the findings of the athletes' predictions compared with the observed. The results show women to be more accurate in their predicted profiles; only five traits had significant difference between predicted and observed scores. The males were incorrect on eight of their predicted scores.

The results also show that both groups tended to overestimate their predicted profiles. Both groups overestimated on twelve of the sixteen traits.

Personality measurement and comparison is a factor important to coaches and athletes alike. This information, once made available, will

assist coaches in their assessment and handling of athletes. There is no magic formula in dealing with athletes, but more insight can only assist coaches in dealing with groups and individuals.

Self perception compared to observation is important to athletes, especially team sport athletes in that it helps athletes view themselves as others see them. It also hopefully will aid in facilitating team efficiency.

Studies that attempt to identify the factors that facilitate motor performance are crucial to athletic coaches who are sincerely interested in improvement. To this author, some questions this study has suggested seem worth investigation. For example, will the same results be produced with a large sample at another similar institution? Will other team sports show similar personality profiles? Should women athletes be handled differently psychologically than male athletes? Would male coaches for female athletes increase motor performance?

Not enough is known about what will elicit improved motor performance; personality of athletes and coaches is just a small area. More descriptive data is needed in this area because accurate information about motor performance considerations is essential to progress in this field. .

APPENDIX

Figure 1

16 PF Profile for Male and Female
Team Sport Athletes

Mm	Mf	Factor	Low Score Description	Sten Scores						High Score Description
				3	4	5	6	7	8	
5.36	4.61	A	Reserved	.	.	.	.	.	.	Outgoing
5.40	5.44	B	Less Intelligent	.	.	.	.	.	.	More Intelligent
6.04	6.27	C	Affected by Feelings	.	.	.	.	.	.	Emotionally Stable
5.96	6.61	E	Humble	.	.	.	.	.	.	Assertive
5.56	5.44	F	Sober	.	.	.	.	.	.	Happy-Go-Lucky
5.52	6.50	G	Expedient	.	.	.	.	.	.	Conscientious
5.92	5.38	H	Shy	.	.	.	.	.	.	Venturesome
6.28	5.22	I	Tough-Minded	.	.	.	.	.	.	Tender-Minded
5.32	6.11	L	Trusting	.	.	.	.	.	.	Suspicious
5.24	5.72	M	Practical	.	.	.	.	.	.	Imaginative
5.72	5.44	N	Forthright	.	.	.	.	.	.	Shrewd
5.52	5.77	O	Self-Assured	.	.	.	.	.	.	Apprehensive
6.12	7.05	Q ₁	Conservative	.	.	.	.	.	.	Experimenting
5.96	5.72	Q ₂	Group-Dependent	.	.	.	.	.	.	Self-Sufficient
6.00	6.22	Q ₃	Undisciplined Self-Conflict	.	.	.	.	.	.	Controlled
4.88	5.50	Q ₄	Relaxed	.	.	.	.	.	.	Tense

----- Female Athletes
 _____ Male Athletes

Figure 2

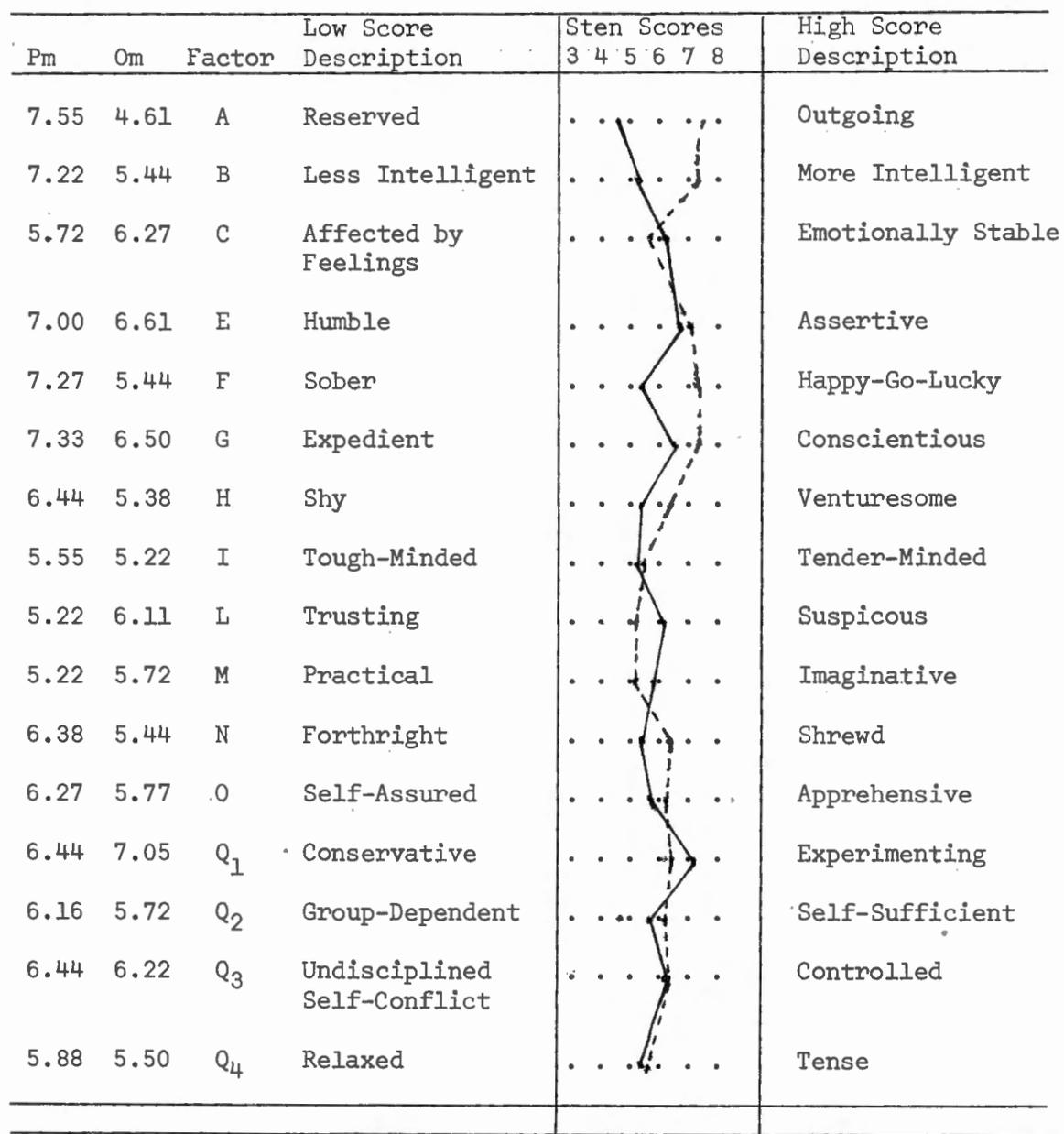
Predicted and Observed 16 PF Profile
for Male Team Sport Athletes

Pm	Om	Factor	Low Score Description	Sten Scores						High Score Description
				3	4	5	6	7	8	
7.08	5.36	A	Reserved	.	.	.	.	.	.	Outgoing
7.28	5.40	B	Less Intelligent	.	.	.	.	.	.	More Intelligent
7.16	6.04	C	Affected by Feelings	.	.	.	.	.	.	Emotionally Stable
7.20	5.96	E	Humble	.	.	.	.	.	.	Assertive
6.96	5.56	F	Sober	.	.	.	.	.	.	Happy-Go-Lucky
6.96	5.52	G	Expedient	.	.	.	.	.	.	Conscientious
6.16	5.92	H	Shy	.	.	.	.	.	.	Venturesome
4.52	6.28	I	Tough-Minded	.	.	.	.	.	.	Tender-Minded
4.92	5.32	L	Trusting	.	.	.	.	.	.	Suspicious
4.96	5.24	M	Practical	.	.	.	.	.	.	Imaginative
6.08	5.72	N	Forthright	.	.	.	.	.	.	Shrewd
5.00	5.52	O	Self-Assured	.	.	.	.	.	.	Apprehensive
6.36	6.12	Q ₁	Conservative	.	.	.	.	.	.	Experimenting
7.56	5.96	Q ₂	Group-Dependent	.	.	.	.	.	.	Self-Sufficient
6.56	6.00	Q ₃	Undisciplined Self-Conflict	.	.	.	.	.	.	Controlled
5.04	4.88	Q ₄	Relaxed	.	.	.	.	.	.	Tense

----- Predicted Mean
 _____ Observed Mean

Figure 3

Predicted and Observed 16 PF Profile
for Female Team Sport Athletes



- - - - - Predicted

_____ Observed

Figure 4

16 PF Profile for Male and Female
Team Sport Athletes and College Norms*

Mm	Mf	Factor	Low Score Description	Sten Scores						High Score Description
				3	4	5	6	7	8	
5.36	4.61	A	Reserved	.	.	.	.	.	.	Outgoing
5.40	5.44	B	Less Intelligent	.	.	.	.	.	.	More Intelligent
6.04	6.27	C	Affected by Feelings	.	.	.	.	.	.	Emotionally Stable
5.96	6.61	E	Humble	.	.	.	.	.	.	Assertive
5.56	5.44	F	Sober	.	.	.	.	.	.	Happy-Go-Lucky
5.52	6.50	G	Expedient	.	.	.	.	.	.	Conscientious
5.92	5.38	H	Shy	.	.	.	.	.	.	Venturesome
6.28	5.22	I	Tough-Minded	.	.	.	.	.	.	Tender-Minded
5.32	6.11	L	Trusting	.	.	.	.	.	.	Suspicious
5.24	5.72	M	Practical	.	.	.	.	.	.	Imaginative
5.72	5.44	N	Forthright	.	.	.	.	.	.	Shrewd
5.52	5.77	O	Self-Assured	.	.	.	.	.	.	Apprehensive
6.12	7.03	Q ₁	Conservative	.	.	.	.	.	.	Experimenting
5.96	5.72	Q ₂	Group-Dependent	.	.	.	.	.	.	Self-Sufficient
6.00	6.22	Q ₃	Undisciplined	.	.	.	.	.	.	Controlled
4.88	5.50	Q ₄	Relaxed	.	.	.	.	.	.	Tense

*Norms for College Students are scores from 5.00 - 6.00

- - - - - Female Athletes
 _____ Male Athletes

BIBLIOGRAPHY

- Albaugh, Glen R. "A Comparative Study of the Ability of Basketball Coaches to Assess the Personality Traits and Profiles of their Players." (Ph.D. Dissertation, University of Utah, 1970.)
- Booth, E.G. "Personality Traits of Athletes as Measured by the MMPI." Research Quarterly, 29: 127-138, 1958.
- Brown, Edward A. "A Comparative Study of Personality Traits of Varsity Wrestlers, Varsity Swimmers, and Collegiate Non-athletes at Selected Institutions of Higher Learning in the Intermountain Area." (Ph.D. Dissertation, University of Utah, 1969.)
- Brown, Edward A. "Personality Characteristics of Wrestlers." (Master's thesis, University of Minnesota, 1958.)
- Cattell, Raymond B. Description and Measurement of Personality. (New York: World Book Company, 1969.)
- Cattell, Raymond B. Personality and Social Psychology. (San Diego: Knapp Publisher, 1964.)
- Cattell, Raymond B. The Scientific Analysis of Personality. (Chicago: Aldine Books, 1965.)
- Cattell, Raymond B., Herbert W. Eber, Maurice M. Tatsuoka. Handbook for the Sixteen Personality Factor Questionnaire (16 PF). (Champaign, Illinois: Institute for Personality and Ability Testing, 1970.)
- Clark, H. and P. Clark. Research Design in Health, Physical Education, Recreation. (Englewood Cliffs, New Jersey: Prentice-Hall, 1970.)
- Edwards, Allen L. The Measurement of Personality Traits by Scales and Inventories. (New York: Holt, Rinehart, and Winston, Inc., 1970.)
- Foster, E.G. "Personality Traits of Highly Skilled Basketball and Softball Women Athletes." (Ph.D. Dissertation, University of Indiana, Bloomington, 1972.)
- Hendry, L.B. "Assessment of Personality Traits in the Coach-Swimmer Relationship, and a Preliminary Examination of the Father-Figure Stereotype." Research Quarterly, 39: 543-555, 1968.

- Heusner, L. "Personality Traits of Champion and Former Champion Athletes." (Master's Thesis, University of Illinois, Champaign, Illinois, 1951.)
- Kane, J.E. "Personality and Physique of Athletes." Physical Recreation, (1160): 34.
- Kroll, Walter. "Sixteen Personality Factor Profiles of Collegiate Wrestlers." Research Quarterly, (38): 49-58, 1967.
- Kroll, Walter and R. Carlson. "Discriminate Function and Hierarchical Grouping Analysis of Karate Participants' Personality Profiles." Research Quarterly, (38): 405-411, October, 1967.
- Lakie, William L. "Personality Characteristics of Certain Groups of Athletes." Research Quarterly, (33): 566-567, December, 1962.
- Malumphy, T.M. "Personality of Women Athletes in Intercollegiate Competition." Research Quarterly, (38): 610, 620, 1968.
- Mushier, C.L.A. "A Cross-sectional Study of the Personality Factors of Girls and Women in Competitive Lacrosse." (Ph.D. Dissertation, University of Southern California, Los Angeles, 1970.)
- McClenney, B.N. "A Comparison of Personality Characteristics, Self-concepts and Academic Aptitude of Selected College Men, Classified According to Performance on a Test of Physical Fitness." (Ph.D. Dissertation, University of Texas, Austin, Texas, 1969.)
- McGrath, J.H. Unpublished Manuscript used in Educational Administration 756, University of Utah, Salt Lake City, Utah, 1970.
- Nelson, D. and P. Langer. "Getting to Really Know your Players." Athletic Journal, (44): 39,88-93, 1963.
- Ogilvie, Bruce C., and Keith W. Johnsgard. "The Personality of the Male Athlete." Academy Paper of the American Academy of Physical Education. (1): 45-52, March, 1967.
- Ogilvie, Bruce C., and T. Tutko. Problem Athletes and How to Handle them. (London: Pelham Books, Ltd., 1967.)
- Ogilvie, Bruce C., and T. Tutko. "Self-perception as Compared with Measured Personality of Selected Male Physical Educators." Paper presented at the meeting of the Second International Congress of Sport Psychology. Washington, D.C., October, 1968.
- Ogilvie, Bruce C., and T. Tutko. "Some Psychological Traits of the Successful Coach." (Manuscript, San Jose State College: Institute for the Study of Athletic Motivation, 1966.)

- Ogilvie, Bruce C., and T. Tutko. "The Role of the Coach in the Motivation of Athletes." Motivation in Play, Games, and Sports. 1968.
- Ogilvie, Bruce C., T. Tutko, and L. Lyon. Athletic Motivational Inventory. (Unpublished Handbook, San Jose State College: Institute for the Study of Athletic Motivation, 1968.)
- Ogilvie, Bruce C., T. Tutko, and I. Young. "The Psychological Profile of Olympic Champions: A Brief Look at Olympic Medalists." Presented to the First International Congress of the Psychology of Sports, Rome, 1965.
- Peterson, S.L., J.C. Weber, and W.W. Trousdale. "Personality Traits of Women in Team Sports vs. Women in Individual Sports." Research Quarterly, (38): 686-690, 1968.
- Ricco, Dennis R. "A Comparative Study of Personality Trait Differences Between Tenth, Eleventh, and Twelfth Grade Wrestlers and Non-athletes at the Same Grade Levels." (Master's Thesis, University of Utah, 1969.)
- Rider, Virginia Jane English. "Personality Traits of Physical Education Teachers and Majors." (Ph.D. Dissertation, University of Utah, 1973.)
- Rider, Richard Hall. "Personality Traits of Basketball Coaches as Perceived by Coaches and Their Players." (Ph.D. Dissertation, University of Utah, 1971.)
- Runyon, Richard P., and Audrey Haber. Fundamentals of Behavioral Statistics. (Reading, Mass.: Addison-Wesley Publishing Co., 1968.)
- Rushall, Brent S. "The Analysis of the Personality of a Football Squad and Suggestions for Utilizing Findings." (Paper for the Athletic Department, University of Indiana, 1967.)
- Rushall, Brent S. "Analysis of the Relationship between Personality and Success in Football Teams." Unpublished Manuscript, 1968.
- Rushall, Brent S. "An Evaluation of the Relationship between Personality and Physical Performance Categories." Paper for the Second International Congress of Sports Psychology, 1968.
- Slaughter, M.H. "An Analysis of the Relationship between Somatotype and Personality Traits of College Women." Research Quarterly, (41): 569-575, 1970.
- Werner, Alfred C., and Edward Gottheil. "Personality Development and Participation in College Athletics." Research Quarterly, (37): 126-131, March, 1966.

Whiting, H.T.A. and D.E. Stembridge. "Personality and the Non-swimmer."
Research Quarterly, (36): 348-356, October, 1965.

Whitla, Dean K. Handbook of Measurement and Assessment in Behavioral
Sciences. (Reading, Mass.: Addison-Wesley, Publishing Co., 1968.)