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THE IMPACT OF AN ORGANIZED VARSITY SPORTS PROGRAM IN THE PENNSYLVANIA BUREAU OF CORRECTION AS IT RELATES TO INMATE SELF-ESTEEM

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ABSTRACT

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Purpose:

The objective of this study was to determine if inmate participation in the Pennsylvania Bureau of Correction's organized varsity sports program is associated with inmate self-esteem.

Methods:

The methods used in this study were: (1) distribution of Coopersmith's (1961) Self-Esteem Inventory (SEI) to randomly selected varsity sports participants (N=100) and a matched pair sampling of non-participants (N=100), based on specific variables, and (2) sampling of March and April, 1978 inmate receptions so they may be subsequently placed in one of four groups found in the Randomized Solomon Four-Group Design, i.e. Phase II. (April receptions were identified as groups 1 and 2 since they were pretested with the SEI, March receptions were identified as groups 3 and 4. All four groups were posttested.), (3) conducting a computer analysis of this data to determine frequency distributions for five variables, and (4) considering all results with a probability of .05 or less as significant.

Findings:

1. The study indicates that *no significant difference exists between sports participants and non-participants* as it relates to self-esteem, as found in Phase I.

2. There was no statistical significance found between the mean scores of the SEI of the participants and non-participants while controlling for the effects of pretesting and other outside variables.

3. There was negligible association found between the SEI scores of sports participants while controlling for race.

4. There was negligible association found between the SEI scores of sports participants while controlling for race.

5. There was negligible association found between the SEI scores of non-participants while controlling for race.

6. While not significant at the probability level of .05, the SEI scores generally increase after initial incarceration for both participants and non-participants.

7. While not significant at the .05 probability level, individuals who become involved with the organized varsity sports program generally have a higher level of self-esteem prior to their involvement.

8. The self-esteem of the non-participant (while still mathmatically lower than that of the participant) generally increases more than that of the participant's increase of self-esteem.

9. A statistically significant difference (t=1.8080, df=176, p=.05) was found between the pre and posttests of April's non-participants. The group's mean SEI score increased from 1.687 to 18.147, a net mean increase of 1.27.

10. Generally speaking, inmates who were later to be identified as sports participants displayed a mathmatically higher mean SEI score than non-participants (18.500 vs. 16.876 respectively). This mathmatically higher mean SEI score was also true in reviewing the posttest scores of the two groups (19.500 vs. 18.146, respectively).

While the non-participant has displayed a mathmatically lower mean SEI score, the non-participant has increased his mean SEI scores at a faster rate than has the sports participant. This leads the researcher to believe that

sooner or later the mean SEI Scores found between the four groups will gradually merge.

11. Generally speaking,the inmates who participate in the Bureau's organized varsity sports program tend to display a mathmatically higher mean SEI Score than the inmate non-participant *prior to* that involvement. While this difference is not statistically significant, it allows the reader to assume that inmates who participate in the organized varsity sports program have a sound level of self-esteem *prior to* that athletic involvement, not *because of* that participation. Stated simply, organized sports program will attract inmates who already have an adequate self-esteem.

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CHAPTER 1
INTRODUCTION

The purpose of this chapter is to present the reader with a discussion of the issue and problem statement so as to enable the reader to comprehend the purpose of this study and its potential importance to the correctional administrator who is always looking for new methods to introduce rehabilitative programs.

The fact that sports is an important part of prison life was brought home to millions of American television viewers on Saturday February 10, 1979 as they viewed Rahway State Prison inmate James Scott defeating Richie Kates in a nationally televised light-heavyweight bout fought *inside* the prison on "CBS's Sports Spectacular."

Scott, who is on his way to gain a bout with the current light-heavyweight champion, is an articulate inmate who has devoted his prison life to boxing. To Scott, boxing "... makes life behind these walls just alittle bit better."

Scott is not the first prison inmate who has gained national prominence while incarcerated due to his boxing skills. Boxing in particular seems to draw the majority of interest in prison sports. Perhaps that is why so many state prison systems already offer or are considering instituting an expanded sports program. Inmates like James Scott and Bobby Lee Hunter (an inmate from Sourth Carolina's Manning Correctional Institution, who achieved national publicity during 1971-72 when he was striving to make the U.S. Olympic team for the 1972 Munich Olymics) appear to rise to the top in national athletic competition *in spite of, not because of*, their prison's organized sports programs.

The Pennsylvania Bureau of Correction has done much to improve its organized sports program within the past four years. Sports programming in the Bureau of Correction has evolved from a mediocre intramural program into a highly organized varsity sports program which sponsors regularly scheduled inter-institutional athletic events in the sports of football, basketball, softball and boxing.

Research Issue

Whether or not to fund an organized varsity sports program in prisons is certainly not the most particularly pressing problem the state correctional administrator faces today; however, it is an issue they must be prepared to respond to, for prison inmates as well as civil libertarians are *demanding*, not requesting, that increased money, personnel and institutional time be available for recreation or sporting events.

The demand for increased recreational and athletic activities in prisons is not a new concept, though it is most certainly gaining momentum from society at large. A recent ABC news commentary focused on the leisure activity of the American citizen, and was surprised to find that now individuals view recreation as an inherent right and not as a luxury only the well-to-do could once afford. This inherent right to recreation within a prison system was dramatically brought to light during the 1971 Attica Prison uprising. This demand for increased recreational activities was viewed as so important by the Attica insurgents that they included it as one of their famous "Fifteen Practical Proposals." This proposal was one of "twenty-eight points" that then New York State Commissioner of Correction Russell G. Oswald agreed to accept during the uprising.

Today most state prison systems have some sort of intramural sports program operating within their prisons, but few have let intramural competition evolve beyond much more than a form of in-house institutional recreation.

To the state prisons that use sports activity as recreation -- inmate participation then becomes just that -- recreation. However, when a state prison system decides to let the concept of organized varsity sports on a state-wide basis develop, it begins to take on an added characteristic. Inmate participation in an organized sports program which operates on a state-wide system then can begin to develop into an unintentionally disguised treatment program designed to address the complex personal problems of anxiety, boredom, frustration, lack of achievement, self-confidence and self-esteem.

Involvement in a prison's organized sports program has been encouraged by numerous correctional administrators, both past and present. Former Sing Sing Warden Lewis E. Lawes noted in his *Twenty Thousand Years at Sing Sing* (1932) that ...

> ...in this period of play and healthful recreation there is no time or inclination to think of self. The body is too active, the mind intent on immediate contests and the arm to win.[1]

Many more correctional administrators are becoming aware of the heretofore unexplored possibilities of recreation as treatment.

> Under the guise of recreation, personality problems may be approached by the staff through the "back door" because they permit informal staff-inmate relationships. The shy, inadequate person may be drawn out, and the bully may be guided into more acceptable ways of relating himself with others.[2]

Others see recreation in a different light, while at the same time recognizing its importance. Tappan's *Crime, Justice and Correction* (1960) states:

> Recreational activities are important to inmate morale and are significant, therefore, to effective insitutional discipline. Furthermore, it is increasing apparent that expanding leisure time in the free community calls increasingly for the development of habits, interests, and enjoyments to which, thus far, our society has paid little heed.[3]

The issue of providing an organized varsity sports program on a statewide basis in a state prison system will entail a great deal of reflection and commitment on the part of the correctional administrator. The question of whether or not to commit time, money and personnel to a program such as this will hinge primarily on whether or not the correctional administrator is willing to admit that involvement in organized sports can have a positive effect on the entire committed inmate population.

Problem Statement

The research problem that this study will address is the effect of a prison's organized sports program upon its participants. While this study (nor any other) cannot control for all variables, completion of the study will allow the researcher to state that involvement in an organized sports program while incarcerated *may* be associated with an inmate's level of self-esteem.

Specifically, then, the operational problem that this study will examine is to investigate the hypothesis that inmates who participate in one of the Bureau's four organized sports programs (football, basketball, softball and boxing) display a higher level of self-esteem as opposed to the general inmate population. Therefore, the hypothesis that this study will utilize is the following:

> Those inmates who participate in organized prison sports programs will display a higher level of self-esteem than those inmates who do not participate.

CHAPTER 2
REVIEW OF THE LITERATURE

Just as organized prison varsity sports programs are a relatively recent innovation in prison programming, so too are the evaluations of those programs.

The only major work to date which has addressed the association between involvement in an institutional sports program and institutional adjustment, recidivism, etc., was conducted by Medve in 1961. Unfortunately Medve's work, "The Rehabilitative Aspects of Team Sports in a Reformatory," which was published in the *Journal of Correctional Education* did not contain a control group, thus negating the possibility of positively stating that institutional sports do have a significant impact upon the incarcerated. However, Medve's study did induce Martinson to state in his landmark work, *The Effectiveness of Correctional Treatment: A Survey of Treatment Evaluation Studies* to state ...

> ...Medve's findings suggest, at least, that meaningful institutional programming may have an impact upon both institutional behavior and post-release behavior.[4]

Specifically, Medve's study examined the association between participation in intramural and varsity level sports and recidivism and parole violation for young males confined to a reformatory.

> In this study (Medve, 1961), the author discovered that those young male reformatory inmates who participated moderately or on very active levels (intramural or varsity) violated parole during a one-year follow-up less frequently than those who were inactive in sports. The absence of a control group in this study, however, makes these findings tentative since it may be that young men who chose to participate in sports may be less likely to violate parole than those who do not so chose.[5]

Martinson's mention of Medve's work enables the reader to realize just how neglected this area of correctional evaluation has been, as the purpose of Martinson's work was to...

> ...provide a comprehensive compilation and analysis of local, national, and foreign research studies that have been and are currently being conducted to evaluate the treatment of criminal and juvenile offenders (from January 1, 1945 to December 31, 1967). The basic questions asked were , What treatment methods have been administered to criminal offenders? What can be said of their effectiveness in changing the offender or in reducing recidivism?[6]

This does not imply that no studies have been conducted which examine the association between athletics and delinquency . Schaefer's "Participation in Interscholastic Athletics and Delinquency: A Preliminary Study," which appeared in a 1969 issue of *Social Problems* makes strong suggestions as to the association between participation in interscholastic athletics and its deterring effect on delinquency. While Schaefer's article does not address institutional sports participation, his predictions are relevant to Medve's findings and to sports involvement in general. Schaefer states that...

> ...to predict that other things being equal, participation in interscholastic athletics will have a deterring influence on delinquency. Stated in testable terms, athletes will have a lower delinquency rate than non-athletes, other things being equal.[7]

This deterring influence mentioned by Schaefer is important to correctional administrators who plan activities for those incarcerated. Even if their only goal is to reduce the amount of institutional tension and turmoil, sports programming is worthy of serious expansion. What is true in society's ghettos is equally true in their prisons.

> ...Theorists contend that delinquency often arises out of sheer boredom...Clearly, athletes are less likely to be bored and thereby suspectible to delinquency than are comparable non-athletes, since sports take so much time...Even when not directly occupied in practice or competition, the athlete's psychic emerges and loyalties are still directed in a conforming direction.[8]

Nolan's (1954) article about the association between juvenile delinquency and athletics also addresses the question of preventative delinquency. Nolan was of the opinion that athletic participation enabled the individual to conform to socially accepted standards by stating:

> Play becomes a natural outlet for the competitive instinct, and guided play becomes a way of learning about life...The rules of social behavior, the "shall" and "shall not," become gradually a part of his whole personality and makeup and are carried over , naturally and easily, into the world that exists outside sports, the world that will soon absorb him.[9]

While participation in a prison community's organized varsity sports program may not be the answer for the entire inmate population, it certainly is for a considerable percent. Participation in organized athletic competition is probably one of the few areas where participants and spectators alike can escape from the tedious existence of day to day incarceration. In Clemmer's *The Prison Community* (1940), the effect of the institution was regarded as harmful to the rehabilitation of the inmate. It is the hope of many state prison administrators that by enlarging their recreational programs, especially their sports programs, that these effects will not be as severe.

In the words of Rahway State Prison inmate James Scott, future contender for the light-heavyweight championship of the world, those "...left jabs and right hooks keep me going."

CHAPTER III
METHODOLOGY

The method chosen to evaluate the Pennsylvania Bureau of Correction's organized sports program will be to examine the inmate athlete's (hereinafter participant) level of self-esteem, and to see if participation in any one of the bureau's organized varsity sports programs (basketball, softball, football and boxing) could be one of the factors responsible for higher level of self-esteem as compared against non-participants.

Survey Instrument

The survey instrument that this study will utilize is the Self-Esteem Inventory (SEI), developed by Stanley Coopersmith in 1967 (see Appendix A). The original SEI was composed of 50 items and primarily drawn from the work of Rogers and Dymond (1954). The 50 item SEI was then reduced to 25 items so as to avail itself for use by subjects of all ages. In comparison to the long 50 item form, the short 25 item form yielded a correlation of over .95 when tested.

The statements are answered either "like me" or "unlike me" and are multi-dimensional in nature. The dimensional aspects of the SEI yield four distinct areas of concern. They are as follows: (1) self-derogation, (2) leadership-popularity, (3) family-parents, and (4) assertiveness-anxiety, with "...the family-parents factor being the most stable and unambiguous." [10]

Scoring of the SEI

Scoring of the SEI was done manually with the use of a templet which identified the high-esteem responses for each of the 25 items. Thus the range of the inventory is 00 (lowest self-esteem possible) to 25 (highest self-esteem possible).

Research Models Utilized

This evaluation utilized two research designs over the project's 12 month period. The use of two research designs was not an attempt to elaborate on the hypothesis, but rather to compliment each other with respect to instrument validity. The use of two separate but related research designs also made necessary that this study be comprised of two distinct phases of data collection.

The first phase of the evaluation utilized a quasi-experimental design, which is methodologically found between the level of a truly controlled experimental design and a nonexperimental design. This type of design is enjoying popularity in research methodology as they "...are intended for situations in which true experimentation is not feasible of desireable..."[11]

> Rigorously controlled experiments are possible in correction more often than is usually assumed, but where they are not feasible, the quasi-experimental use of comparison groups can improve knowledge greatly if a minimum of appropriately standardized and concise records is maintained.[12]

The design examined the levels of self-esteem between two groups of inmates; one group having been identified as varsity sports participants in one of the Bureau's four varsity sports in the previous year, the second group being identified as non sports participants.

Each institutional activity director was requested to submit to the Planning and Research Division a list of those inmates who participated in at least one of the identified varsity sports programs the prior year. This list subsequently identified 482 such inmate athletes who were still committed to the Bureau. The 482 inmates were numerically listed, and from this list 100 inmates were randomly selected (from a standard table of random numbers). A second group of 100 inmates were selected to represent the non-participants. Each non-participant was

individually selected so as to match with a participant, based on the variables race, age, offense, committed county, time served and institutional location (listed with respect to priority). These two groups comprised the first phase of the project.

The second research design that the study utilized as the Randomized Solomon Four-Group Design. Regarding the validity of the design, this four-group design:

> ...permits the control and measurement of both (1) the main effects of pretesting and (2) the interaction effects of pretesting and X. Furthermore, the combined effects of maturation and history can be measured if the T_2 mean for group 4 is compared with the T_1 means. This design actually amounts to doing the experiment twice (once with pretests and once without). Consequently, if the results of the "two experiments" are consistent, greater confidence can be placed in the findings than would otherwise be possible.[13]

The second phase of the study utilized select inmate receptions who were initially received and processed through one of Bureau of Correction's three diagnostic and classification centers (DCC). This phase used those inmates who were processed in March and April of 1978.

In February 1978, the directors of the DCC's were informed of the project and were requested to include the SEI along with the normal battery of psychological tests administered to the inmate before his subsequent prison placement and program development. The SEI was administered to only the April commitments, as this would control for pre-test sensitivity. (See Figure 1.).

After ten months had elapsed (allowing sufficient time for the April 1978 commitments to become involved in any one of the four varsity sports), the March and April 1978 commitments were placed into one of four groups (this again corresponds to the Randomized Solomon's Four Group Design) according

to their involvement in sports. The four groups are:

Group 1 - April commitments who became involved in sports;

Group 2 - April commitments with no involvement in sports;

Group 3 - March commitments who become involved in sports, and

Group 4 - March commitments with no involvement in sports.

Chosen Level of Significance

This study selected the 0.05 level of significance at which it would test the hypothesis.

> Traditionally, evaluation research uses the 0.05 level significance. This means that the outcome found will be attributed to change if it can be demonstrated by a test of significance that the outcome could have occured by chance 5 percent (or more) of the time. More specifically, a test of significance provides a statement of the probability that a difference as large or larger than the difference observed could have occured as the result of the operation of random phenomena - chance - when there really should be no difference - or when there should be a particular difference. These random phenomena that may produce differences include random sampling, random allocation of cases to treatment and control groups, and random errors of response or measurement.[14]

Instrument Reliability

No reliability determinations have been conducted on the SEI 25 item short form; however, two reliability checks for the long form were reported in Robinson and Shaver's *Measures of Social Psychological Attitudes* (1973). Taylor and Reitz (1968), authors of numerous reliability studies, have reported a .90 split-half reliability for the long form, while Coopersmith displayed a test-retest reliability of .88 over five weeks and .70 over three years.

In that no accuracy determinations of the SEI short form have been performed, the reader must conclude that the reliability is "...probably somewhat less stable due to the shorter length."

Instrument Validity

Coopersmith's Self-Esteem Inventory has been correlated with a number of related self-esteem measuring scales. Comparison of Rosenberg's Self-Esteem Scale (1965) indicates that a correlation of .59 and .60 exists between the SEI short form. A correlation of .68 was obtained from comparing the SEI long form and Soares' Self Perception Inventories (1965). Numerous other validity correlations may be obtained by referring to Robinson and Shaver's *Measures of Social Psychological Attitudes* (1973).

Analysis of Data

This study utilized the computer center of the Pennsylvania State University's Capital Campus in Middletown, Pennsylvania for data analysis.

Data analysis was achieved by use of the "Statistical Package for the Social Sciences" (SPSS).

Study Sites

The inmate subjects used in this study were from the Pennsylvania Bureau of Correction's state correctional institutions at Camp Hill, Dallas, Graterford, Huntingdon, Pittsburgh and Rockview. The State Correctional Institution at Muncy (Pennsylvania's female prison) was excluded from this study since the recreational sports offered there are not of a competitive varsity level. No subjects came from the State Regional Correctional Facility at Greensburg for the reason that no inmates from that institution were identified as a result of the random sample.

CHAPTER IV
ANALYSIS OF DATA

Since this study is composed of two separate research designs (a quasi-experimental design for Phase I and the Solomon's Randomized Four-Group Design for Phase II), each phase will be discussed separately.

Phase I Findings

During February, 1978 the Activities Section of the Pennsylvania Bureau of Correction identified 482 prison inmates who were labeled varsity sports participants during 1977. From this list,a random sample identified 100 inmates via a table of random numbers to comprise the experimental group. Additionally, 100 inmate non-participants were selected to comprise the control group, based on the variables race, age, offense committed, committing county, time served and institutional location. Of these 200 inmates identified to participate in the quasi-experimental design, 154 inmates volunteered to take the pretest. The frequency distribution for the 154 inmate's SEI score can be found on Table 1. Viewed separately in groups, the frequency distributions for the two groups (experimental group, i.e. sports participants, N=84; and control group, i.e., non-participants, N=70) can be found on Tables 2 and 3, respectively.

Initially, the difference-of-means test would probably be preferred by most researchers, but since the study did not utilize two independent

TABLE I

Self-Esteem Inventory Responses

for Phase I

SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
06	1	0.6	0.6
07	2	1.3	1.9
08	1	0.6	2.6
09	1	0.6	3.2
10	2	1.3	4.5
11	4	2.6	7.1
12	3	1.9	9.1
13	4	2.6	11.7
14	5	3.2	14.9
15	7	4.5	19.5
16	4	2.6	22.1
17	7	4.5	26.6
18	10	6.5	33.1
19	19	12.3	45.5
20	13	8.4	53.9
21	17	11.0	64.9
22	25	16.2	81.2
23	13	8.4	89.6
24	10	6.5	96.1
25	6	3.9	100.0
Total	154	100.0	100.0

Mean	19.117	Std. Err	0.337	Minimum	06.00
Median	20.038	Std. Dev.	4.182	Maximum	25.00
Mode	22.00	Range	19.00	Variance	17.489

TABLE 2

Self-Esteem Inventory Responses

for Sports Participants

SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
06	1	1.2	1.2
08	1	1.2	2.4
10	1	1.2	3.6
11	1	1.2	4.8
13	2	2.4	7.1
14	3	3.6	10.7
15	3	3.6	14.3
16	3	3.6	17.9
17	3	3.6	21.4
18	5	6.0	27.4
19	12	14.3	41.7
20	7	8.3	50.0
21	10	11.9	61.9
22	14	16.7	78.6
23	10	11.9	90.5
24	5	6.0	96.4
25	3	3.6	100.0
Total	84	100.0	100.0

Mean	19.619	Std. Err.	0.416	Minimum	6.00
Median	20.500	Std. Dev.	3.815	Maximum	25.00
Mode	22.00	Range	19.00	Variance	14.552

TABLE 3

Self-Esteem Inventory Responses

for Non-Participants

SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
07	2	2.9	2.9
09	1	1.4	4.3
10	1	1.4	5.7
11	3	4.3	10.0
12	3	4.3	14.3
13	2	2.9	17.1
14	2	2.9	20.0
15	4	5.7	25.7
16	1	1.4	27.1
17	4	5.7	32.9
18	5	7.1	40.0
19	7	10.0	50.0
20	6	8.6	58.6
21	7	10.0	68.6
22	11	15.7	84.3
23	3	4.3	88.6
24	5	7.1	95.7
25	3	4.3	100.0
Total	70	100.0	100.0

Mean	18.514	Minimum	7.00	Variance	20.601
Median	19.500	Maximum	25.00	Std. Err.	0.542
Mode	22.00	Range	18.00	Std. Dev.	4.539

sampling techniques, the *t test* is technically inappropriate. However, since the two groups did not utilize a direct pair-by-pair comparison, a *t test* was utilized.

A significance level of 0.05 and a one-tailed test were selected to define the significance levels in the first phase.

The data analysis (which was done manually) in Phase I demonstrated that there was a statistically significant difference found between the sample and cohort means (t=1.88, df=152, p=.05). This statistical significance supported the hypothesis that those inmates who participate in an organized varsity sports program will tend to have a higher level of self-esteem than those who do not participate in sports programs.

> "Significant" here does not mean "important" or "consequence"; it is used here to mean "indicative of" or "signifying" a true difference between the two populations.[15]

However, since this researcher had access to computer facilities at Pennsylvania State University's Capital Campus in Middletown, Pennsylvania, the data was re-examined utilizing the *Statistical Package for the Social Sciences* (SPSS), which "...is an integrated system of computer programs designed for the analysis of social science data."[16] This data analysis produced findings (t=1.6448, df=152, p=.05) *that alter the findings* as reported in "Sports Program Evaluation: Phase I."

This difference of opinion can be attributed to the more sophisticated level of information which was obtained from the computer than what was available manually.

Specifically, the area of disagreement focuses on the difference found between the calculated t values of the two methods of data analyses. In Phase I,

in order to support the research hypothesis, the calculated t value had to exceed the critical value of t, i.e. 1.6450. When the data was analyzed manually, the calculated t value was 1.88, which exceeded the already defined critical value of t and hence supported the hypothesis. However, the calculated t value was defined at 1.6448 when relying upon the data analysis from the SPSS program. Since this value does not exceed the critical t value of 1.645, *the research hypothesis cannot be supported!* A manual check of Phase I's data was done using the analysis as found in the SPSS program, and the manual check supported the computer findings.

Therefore, Phase I data cannot support the research hypothesis that there is a statistically significant different found between sports participants and non-participants in regard to self-esteem.

The relatively small difference between the calculated t values (0.003) does allow the researcher to hypothesize that he has made an incorrect decision based on the measurement of the samples and not on the populations. This incorrect decision is known as a *Type II Error.*

> Since no significant differences among the sample and cohort means were found the null hypothesis was accepted. Consequently, there is a possibility of a Type II Error. ...Furthermore, since inferential statistics is concerned with inferences from samples and since population characteristics are rarely known, the researcher seldom knows if a Type II Error has occurred.[17]

Phase II Findings

Phase II requires a complex research design which can accommodate four groups (April sports participants and non-participants as well as March's sports participants and non-participants); two groups receiving treatment i.e., participation in the organized sports program; two groups

receiving a pretest; and all four groups receiving a posttest. The research design selected for use in Phase II was consequently identified as the Randomized Solomon Four-Group Design (see Figure 1).

The Randomized Solomon Four-Group Design lends itself to a multitude of statistical analyses, however these analyses require that specific conditions be met prior to the acceptance of any research conclusions.

While this design addresses the methodological perimeters of this study, the imposed requirements makes it difficult, if not impossible, for a controlled experiment such as this to take place within a prison. While the study did not alter the construction of the design, it did have to modify the requirements.

The primary condition which this design had to ignore (which will subsequently invalidate the "findings" throughout the entire study) was the requirement that each of the four groups be randomly assigned. This condition was unfortunately the central controlling factor for the design, as "... the random assignment of subjects makes it possible to assume that the pretest scores for groups 3 and 4 would have been similiar to the pretest scores attained by groups 1 and 2."[18]

The random assignment of inmates was not possible since the study could not require that only select inmates participate in organized varsity sports programming. Hence, April receptions who ten months later were identified as varsity sports participants were placed in group 1, while the remaining April, 1978 receptions who were not identified as sports participants were placed in group 2. Likewise, March, 1978 receptions who were identified as sports participants were placed in group 3, with the remaining March, 1978 receptions placed in group 4. This placement by sports participation negates the possibility

FIGURE 1.

Randomized Solomon Four-Group Design

Group	Pretest	(sports involvement)	Posttest
1 *4	T_1 *1	X *2	T_2 *3
2 *4	T_1	.	T_2
3 *5	.	X	T_2
4 *5	.	.	T_2

*1 T_1 = pretest with the Self-Esteem Inventory

*2 X = independent variable, i.e., sports participation

*3 T_2 = posttested with the Self-Esteem Inventory

*4 April commitments

*5 March commitments

FIGURE 2.

Randomized Solomon's Four-Group Design

for Phase II Receptions

Group	Pretested	Treatment (sports involvement)	Posttested
1	T_1	X	12
2	T_1	.	89
3	.	X	11
4	.	.	97
Total	218		209

218 - April receptions who were pretested (Groups 1 and 2)
193 - March receptions who were identified (Groups 3 and 4)
411 - Total number of inmates eligible for posttesting (Groups 1-4)

of assuming that both sports participants and non-participants eminate from the identical population.

The issue of random assignment to one of the four groups can be appreciated by the reader when the number of cases per group is examined. Under the random assignment of subjects to the four groups, an equal number of cases per group would be the obvious advantage, which would subsequently allow the researcher to utilize the Z test, which is particularly appropriate to determine if there exists a significant difference between two sample means, especially those of large samples, i.e., a sample size greater than 30. The t test is satisfactory for large samples, though with the t test if the groups in question have an equal number of results, "... a violation of the assumption of equal variances does not affect the validity of the t test. Furthermore the t "...assumes the two samples come from two populations with equal means *and* equal variances."[19]

For example, only 18 of the 218 inmates who were received by the Bureau in April, 1978 were later identified as sports participants, and only 12 out of the 18 volunteered to take the posttest. Likewise, of the 200 non-participants, only 89 elected to participate in the posttest. This vast difference in group size (N of group 1 = 12; and N of group 2=89) enables the reader to appreciate why the findings of this study are technically invalid. For example, on Table 5, the frequency distributions for those inmates completing the SEI pretest can be found. Since there were only 12 subjects completing the pretest, the effect that a low SEI score, say, 04, could have a dramatic impact simply because of the low number of subjects in the group. The addition of a SEI score of 04 in Table 5 would cause the mean score to decrease 1.2 points; while in Table 7 the addition of an SEI score of 04 would only decrease their group's mean SEI score by .158.

TABLE 4

Self-Esteem Inventory Responses of

Phase II's Group # 1

(April sports participants)

SEI Score	Pre-test		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
13	1	8.3	8.3
14	1	8.3	16.7
17	2	16.7	33.3
18	1	8.3	41.7
19	2	16.7	58.3
20	2	16.7	75.0
21	1	8.3	83.3
22	2	16.7	100.0
Total	12	100.0	100.0

Mean	18.500	Minimum	13.00	Variance	8.273
Median	19.00	Maximum	22.00	Std. Err.	0.830
Mode	17.00	Range	9.00	Std. Dev.	2.876

TABLE 5

Self-Esteem Inventory Responses of

Phase II's Group #1

(April Sports Participants)

SEI Score	Posttest		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
11	1	8.3	8.3
13	1	8.3	16.7
14	1	8.3	25.0
18	1	8.3	33.3
21	3	25.0	58.3
22	1	8.3	66.7
23	3	25.0	91.7
24	1	8.3	100.0
Total	12	100.0	100.0

Mean	19.500	Minimum	11.00	Variance	19.727
Median	21.167	Maximum	24.00	Std. Err.	1.282
Mode	21.00	Range	13.00	Std. Dev.	4.442

TABLE 6

Self-Esteem Inventory Responses of

Phase II's Group # 2

(April non-participants)

Pretest SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
05	1	1.1	1.1
08	5	5.6	6.7
09	1	1.1	7.9
10	4	4.5	12.4
11	6	6.7	19.1
12	2	2.2	21.3
13	3	3.4	24.7
14	6	6.7	31.5
15	7	7.9	39.3
16	3	3.4	42.7
17	7	7.9	50.6
18	7	7.9	58.4
19	5	5.6	64.0
20	8	9.0	73.0
21	6	6.7	79.8
22	6	6.7	86.5
23	6	6.7	93.3
24	4	4.5	97.8
25	2	2.2	100.0
Total	89	100.0	100.0

Mean	16.876	Minimum	5.00	Variance	23.769
Median	17.429	Maximum	25.00	Std. Err.	0.517
Mode	20.00	Range	20.00	Std. Dev.	4.875

TABLE 7

Self-Esteem Inventory Responses of

Phase II's Group # 2

(April non-participants)

SEI Score	Posttest		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
04	1	1.1	1.1
08	1	1.1	2.2
09	3	3.4	5.6
10	1	1.1	6.7
11	3	3.4	10.1
12	1	1.1	11.2
13	4	4.5	15.7
14	5	5.6	21.3
15	5	5.6	27.0
16	6	6.7	33.7
17	3	3.4	37.1
18	7	7.9	44.9
19	8	9.0	53.9
20	12	13.5	67.4
21	6	6.7	74.2
22	8	9.0	83.1
23	5	5.6	88.8
24	8	9.0	97.8
25	2	2.2	100.0
Total	89	100.0	100.0

Mean	18.146	Minimum	4.00	Variance	20.285
Median	19.063	Maximum	25.00	Std. Err.	0.477
Mode	20.00	Range	21.00	Std. Dev.	4.504

TABLE 8

Self-Esteem Inventory Responses of

Phase II's Group # 3

(March sports participants)

Posttest SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
11	1	9.1	9.1
14	1	9.1	18.2
15	1	9.1	27.3
18	1	9.1	36.4
19	2	18.2	54.5
20	1	9.1	63.6
23	2	18.2	81.8
24	2	18.2	100.0
Total	11	100.0	100.0

Mean	19.091	Minimum	11.00	Variance	18.891
Median	19.250	Maximum	24.00	Std. Err.	1.310
Mode	19.00	Range	13.00	Std. Dev.	4.346

TABLE 9

Self-Esteem Inventory Responses of

Phase II's Group # 4

(March non-participants)

Posttest SEI Score	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
09	1	1.0	1.0
10	3	3.1	4.1
11	1	1.0	5.2
12	4	4.1	9.3
13	5	5.2	14.4
14	5	5.2	19.6
15	7	7.2	26.8
16	8	8.2	35.1
17	9	9.3	44.3
18	10	10.3	54.6
19	7	7.2	61.9
20	8	8.2	70.1
21	5	5.2	75.3
22	9	9.3	84.5
23	7	7.2	91.8
24	7	7.2	99.0
25	1	1.0	100.0
Total	97	100.0	100.0

Mean	18.031	Minimum	9.00	Variance	15.405
Median	18.050	Maximum	25.00	Std. Err.	0.399
Mode	18.00	Range	16.00	Std. Dev.	3.925

Furthermore, analysis of variance cannot be computed because the assignment of the number of cases to the groups was not independent of each other, as those inmates who were not identified as varsity sports participants were automatically dumped in group 2. However, to control for consistency (actually to use unreliable statistical techniques consistently throughout the study), a *t* test will be employed.

Group Analysis

When the pretest SEI scores for group 1 (April receptions/sports participants) were compared against group 2 (April receptions/non-participants) there did not exist a significant difference between the two sample means (18.500 and 16.876 for groups 1 and 2, respectively; t=1.12, df=99, p=.05). The analysis found on Tables 4 and 6 represent the frequency distributions for group 1 and 2's pretest, respectively; likewise, Tables 5 and 7 contain the frequency distributions for the posttests of groups 1 and 2, respectively. Thus, the pretest supports the argument that there is no statistical significance between the self-esteem of inmates prior to their involvement or non-involvement in organized varsity sports.

Upon examining Table 10, the reader can see that both groups 1 and 2 did improve their SEI scores over the course of the 10 months following their reception. Group 1 increased their SEI pretest mean score of 18.500 to 19.500, however this 1.00 increase did not display a statistical significance (t=.65, df=22, p=.05). However, group 2 did increase their mean SEI score a total of 1.27 (from 16.876 to 18.146), which did create a statistically difference between the two means (t=1.8080, df=176, p=.05).

Finally, when the posttests for groups 1 and 2 were compared, a mean difference of 1.354 was displayed. However, this mean difference between the two samples did not display a statistically significant difference (t=.97, df=99, p=.05).

TABLE 10

Breakdown of the Self-Esteem Inventory Scores by Race and Group

Group	SEI pretest $\bar{x}$ score	SEI pretest variance	SEI posttest $\bar{x}$ score	SEI posttest variance	Mean Age	N
April participants						
White	17.250	13.583	15.550	33.667	27.7	4
Black	19.125	5.839	21.500	2.857	23.2	8
For entire group	18.500	8.273	19.500	19.727	24.7	12
April non-particpants						
White	15.955	29.672	18.273	19.970	26.2	44
Black	17.778	16.859	18.022	21.022	27.0	45
For entire group	16.876	23.769	18.146	20.285	26.6	89
March Participants						
White	-	-	23.5	0.500	27.0	2
Black	-	-	18.11	17.611	26.1	9
For entire group	-	-	19.091	18.891	26.2	11
March non-participants						
White	-	-	18.218	16.285	26.9	55
Black	-	-	17.786	14.514	25.9	42
For entire group	-	-	18.031	15.405	26.5	97

In conclusion, with regards to groups 1 and 2, the only statistically significant increase in mean sample SEI scores occurred in group 2 when their pretest SEL score of 16.876 increased to 18.146, as was displayed on the post-test. Therefore, while the two groups did not differ significantly when comparing pre and posttests separately, group 1 did maintain a mathmatically higher SEI score during the two testing periods.

Since groups 3 and 4 were not pretested, it is impossible to determine what, if any, effects sports participation had upon group 3. The comparison of posttests between groups 3 and 4 displayed a 1.06 difference between their sample mean SEI scores, however this difference was not sufficient enough to produce a statistically significant difference (t=1.26, df=106, p=.05).

The design also permits the researcher to determine what effects (if any) sports participation, pretesting and outside influences had upon the group means. Overall, the participation in the Bureau's organized varsity sports program can account for a .564 mean SEI Score difference between groups; the pretest alone accounted for only a 0.11550 mean SEI score difference between groups; and the combined effects of unnamed influences or other variables accounted for a 1.155 mean SEI score difference. Clearly, sports participation can not lay claim to the improvement of an inmate's self-esteem. Most probably, the mathmatical increase in the SEI scores would have to be attributed to other outside variables, such as acceptance of self, internalization of self-concept, etc.

When the study was broken down to review the frequency distributions of sports participants (N=23) versus non-participants (N=186) (see Tables 11 and 12, respectively), analysis produced no statistical significance between the post-test SEI mean scores for groups 1 and 2 (19.304 and 18.086, respectively), with t=1.31, df=207, p=.05.

TABLE 11

Self-Esteem Inventory Responses of
Posttests in Phase II for
Varsity Sports Participants

SEI Score	Posttest		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
11	2	8.7	8.7
13	1	4.3	13.0
14	2	8.7	21.7
15	1	4.3	26.1
18	2	8.7	34.8
19	2	8.7	43.5
20	1	4.3	47.8
21	3	13.0	60.9
22	1	4.3	66.2
23	5	21.7	87.0
24	3	13.0	100.0
Total	23	100.0	100.0

Mean	19.304	Minimum	11.000	Variance	18.494
Median	20.667	Maximum	24.000	Std. Err.	0.89
Mode	23.000	Range	13.000	Std. Dev.	4.300

TABLE 12

Self-Esteem Inventory Responses of Posttests in Phase II for Non-Participants

SEI Score	Posttest		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
4	1	0.5	0.5
8	1	0.5	1.1
9	4	2.2	3.2
10	4	2.2	5.4
11	4	2.2	7.5
12	5	2.7	10.2
13	9	4.8	15.1
14	10	5.4	20.4
15	12	6.5	26.9
16	14	7.5	34.4
17	12	6.5	40.9
18	17	9.1	50.0
19	15	8.1	58.1
20	20	10.8	68.8
21	11	5.9	74.7
22	17	9.1	83.9
23	12	6.5	90.3
24	15	8.1	98.4
25	3	1.6	100.0
Total	186	100.0	100.0

Mean	18.086	Minimum	4.000	Variance	17.647
Median	18.500	Maximum	25.000	Std. Err.	0.308
Mode	20.000	Range	21.000	Std. Dev.	4.201

When the posttest SEI scores were compared with regard to race (see Tables 13 and 14), virtually no difference at all was discovered when examining the mean score, median score, the standard error and standard deviation.

In examining the SEI scores by race and group, white sports participants (N=6) were compared to black participants (N=17), though there resulted no statistical significance between the mean sample scores. With regard to the non-participants, when the while (N=99) and black (N=97) participants were compared to each other, again no statistical significance resulted.

TABLE 13

Self-Esteem Inventory Responses of

Posttests in Phase II for Whites

SEI Score (Posttest)	Whites		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
4	1	1.0	1.0
8	1	1.0	1.9
9	2	1.9	3.8
11	3	2.9	6.7
12	4	3.8	10.5
13	5	4.8	15.2
14	5	4.8	20.0
15	6	5.7	25.7
16	8	7.6	33.3
17	5	4.8	38.1
18	9	8.6	46.7
19	11	10.5	57.1
20	12	11.4	68.6
21	4	3.8	72.4
22	9	8.6	81.0
23	9	8.6	89.5
24	9	8.6	98.1
25	2	1.9	100.0
Total	105	100.0	100.0

Mean	18.238	Minimum	4.000	Variance	18.510
Median	18.818	Maximum	25.000	Std. Err.	0.420
Mode	20.000	Range	21.000	Std. Dev.	4.302

TABLE 14

Self-Esteem Inventory Responses of

Posttests in Phase II for Blacks

SEI Score (Posttest)	Non-Whites		
	Frequency	Relative Frequency (percent)	Cumulative Frequency (percent)
9	2	1.9	1.9
10	4	3.8	5.8
11	3	2.9	8.7
12	1	1.0	9.6
13	5	4.8	14.4
14	7	6.7	21.2
15	7	6.7	27.9
16	6	5.8	33.7
17	7	6.7	40.4
18	10	9.6	50.0
19	6	5.8	55.8
20	9	8.7	64.4
21	10	9.6	74.0
22	9	8.7	82.7
23	8	7.7	90.4
24	9	8.7	99.0
25	1	1.0	100.0
Total	104	100.0	100.0

Mean	18.202	Minimum	9.000	Variance	17.250
Median	18.500	Maximum	25.000	Std. Err.	0.407
Mode	18.000	Range	16.000	Std. Dev.	4.153

CHAPTER 5

CONCLUSIONS

This study was obviously hampered by a multitude of problems, several of them being the following: (1) the inability to randomly assign inmates to a specific group in the Randomized Solomon Four-Group Design, (2) the inability to control for the vast difference in group sizes when comparing sports participants versus non-participants, (3) the inability to use a set statistical devise to determine the difference-of-the means between small and large groups, (4) the relatively short time span that this study had to be conducted over, and (5) the extreme loss of cases over a short period of time.

Other researchers, noteably Martinson et al , have found that correctional research is hampered by a host of problems. In addressing the evaluation studies of correctional treatment and the relatively few number of evaluative studies that meet acceptable guideline criteria, Martinson concluded that ...

> In part, this is a function of the difficulties involved in measuring attitude change, including (1) the loss of cases over time, (2) the likelihood that as time passes, test scores within a group will become more alike, (3) the general instability of the measuring devises utilized, which makes it impossible to determine whether a respondent's change in attitude or personality is due to the unreliability of the test or to actual change, and (4) the inability or the failure to take into account the fact that computing group average change scores overlooks the "room-for-change" individuals may have. (For example, an individual who scores well at time one has less "room" to improve than an individual who scores poorly at time one.

The analysis of data has indicated that there was no significant difference between sports participant and non-participant. While this may be true for the

inmate population, it is equally worth noting that the inmate athlete still possessed a higher mean SEI score than did the non-athlete. What the state prison system did, then, was to make available to newly received inmates who already possessed an more than adequate self-esteem a means of not only preserving that self-esteem but improving on it. Clearly it is evident that the Bureau's organized sports program is more attractable to the inmate who requires athletic participation so that he may identify himself with either a particular sport or a recognizable group of inmates.

FOOTNOTES

1. Lewis E. Lawes, Twenty Thousand Years at Sing Sing (Ray Long and Richard R. Smith, Inc., 1932), p. 218.

2. Elmer H. Johnson, Crime, Correction, and Society (The Dorsey Press, 1968), p. 589.

3. Paul Wl Tappan, Crime Justice and Correction (McGraw-Hill Book Company, Inc., 1960), p. 696.

4. Douglas Lipton, Robert Martinson, and Judith Wilks, The Effectiveness of Correctional Treatment: A Survey of Treatment Evaluation Studies (Praeger Publishers, 1975), p. 332.

5. Ibid, p. 295.

6. Ibid, p. 3.

7. Walter E. Schaefer, "Participation in Interscholastic Athletics and Delinquency: A Preliminary Study, "Social Problems, XVII (1969), 41.

8. Ibid, p. 42

9. James B. Nolan, "Athletics and Juvenile Delinquency," Sociology of Education, 28 (1954/55), p. 265.

10. John P. Robinson and Phillip R. Shaver, Measures of Social Psychological Attitudes (The Institute for Social Research, The University of Michigan), p. 84.

11. Daniel Glaser, "Five Practical Research Suggestions for Correctional Administrators, "Crime and Delinquency, XVII (January, 1971), p. 39.

12. Ibid.

13. Solomon Kobrum, Inferential Statistics (McGraw-Hill Book Company, Inc., 1974), p. 4.

14. Martinson, Effectiveness of Correctional Treatment, p. 19.

15. Norman H. Nie, et al. Statistical Package For the Social Sciences (New York: McGraw-Hill Book Company, 1975), p. 267.

16. Ibid., p. XXI.

17. Schuyler W. Huck, William H. Cormier, and William G. Bounds, Jr., Reading Statistics and Research (New York: Harper & Row, 1974), p.45.

18. Kobrum, Inferential Statistics, p. 41.

19. Ibid., p. 134.

20. Martinson, Correctional Treatment, p. 621.

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APPENDICES

APPENDIX A

P NP

Sb Fb Bb Bx

Age _____ Name _____

Race _____ BC # _____

SCI@ _____

March April ____ ____

SELF-ESTEEM INVENTORY

Please read the following statements and check (✓) whether the statement is like you or unlike you. There are no right or wrong answers.

1. I often wish I were someone else. ___ like me ___ unlike me
2. I find it very hard to talk in front of a group. ___ like me ___ unlike me
3. There are lots of things about myself I'd change if I could. ___ like me ___ unlike me
4. I can make up my mind without too much trouble. ___ like me ___ unlike me
5. I'm a lot of fun to be with. ___ like me ___ unlike me
6. I get upset easily at home. ___ like me ___ unlike me
7. It takes me a long time to get used to anything new. ___ like me ___ unlike me
8. I'm popular with people my own age. ___ like me ___ unlike me
9. My family expects too much of me. ___ like me ___ unlike me
10. My family usually considers my feelings. ___ like me ___ unlike me
11. I give in very easily. ___ like me ___ unlike me
12. It's pretty tough to be me. ___ like me ___ unlike me
13. Things are all mixed up in my life. ___ like me ___ unlike me
14. Other people usually follow my ideas. ___ like me ___ unlike me
15. I have a low opinion of myself. ___ like me ___ unlike me
16. There are many times when I felt like leaving home. ___ like me ___ unlike me
17. I often feel upset about the work that I do. ___ like me ___ unlike me
18. I'm not as nice looking as most people. ___ like me ___ unlike me
19. If I have something to say, I usually say it. ___ like me ___ unlike me
20. My family understands me. ___ like me ___ unlike me
21. Most people are better liked than I am. ___ like me ___ unlike me
22. I usually feel as if my family is pushing me. ___ like me ___ unlike me
23. I often get discouraged at what I am doing. ___ like me ___ unlike me
24. Things usually don't bother me. ___ like me ___ unlike me
25. I can't be depended on. ___ like me ___ unlike me