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OCUMENTATION PAGE

Form Approved OMB No. 0704-0188

AD-A209 693

DTIC ELECTE JUN 29 1989 S D D

2b. DECLASSIFICATION / DOWNGRADING SCHEDULE: Unclassified	1b. RESTRICTIVE MARKINGS
	3. DISTRIBUTION / AVAILABILITY OF REPORT
4. PERFORMING ORGANIZATION REPORT NUMBER(S): 141-88	5. MONITORING ORGANIZATION REPORT NUMBER(S): Approved for public release; Distribution unlimited
6a. NAME OF PERFORMING ORGANIZATION: US Army-Baylor University Graduate Program in Health Care	6b. OFFICE SYMBOL (If applicable): Admin/HSHA-IHC
	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code): Ft. Sam Houston, TX 78234-6100	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING / SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)
	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS: PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT CESSION NO.

11. TITLE (Include Security Classification)
POTENTIAL COST SAVINGS ASSOCIATED WITH A REDUCTION OF STRESS FRACTURES AMONG US ARMY BASIC TRAINEES

12. PERSONAL AUTHOR(S)
CPT Paul V. Kiehl, Jr

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Study	FROM Jul 83 TO Jul 84	Jul 84	86

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Health Care, Cost Saving

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This study examined the potential cost savings of implementing progams to reduce the incidence of lower extremity stress fractures in basic training. The author predicted a potential cost savings of over one million dollars anuually based on a 60% reduction in incidence of stress fractures. The author proposes a program to implement that should achieve a 60% reduction in the incidence of stress fractures.

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT	21 ABSTRACT SECURITY CLASSIFICATION
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	
22a. NAME OF RESPONSIBLE INDIVIDUAL: Lawrence M. Leahy, MAJ(P), MS	22b TELEPHONE (Include Area Code): (512) 221-6345/2324 / 22c. OFFICE SYMBOL: HSHA-IHC

DD Form 1473, JUN 86 *Previous editions are obsolete.* SECURITY CLASSIFICATION OF THIS PAGE

89 6 29 060

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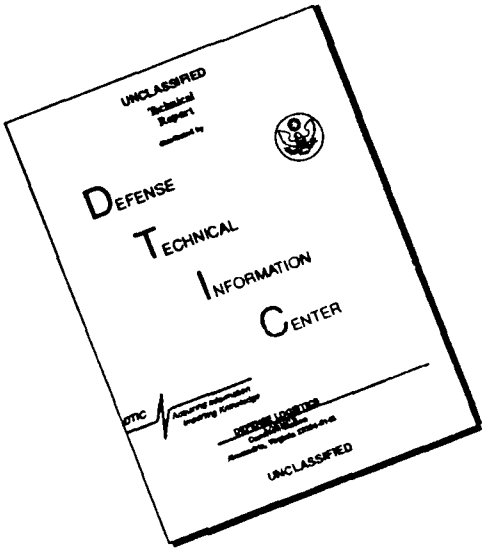

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POTENTIAL COST SAVINGS ASSOCIATED WITH A REDUCTION OF STRESS FRACTURES AMONG US ARMY BASIC TRAINEES

A Graduate Research Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree

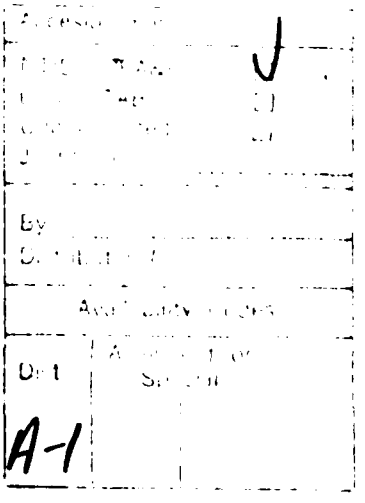
of

Master of Health Administration

by

Captain(P) Paul V. Kiehl, Jr. MSC

July 1984



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ACKNOWLEDGMENTS

I would like to acknowledge the unselfish and responsive efforts of Ms. Terri Beam, Special Studies Branch, Patient Administration System and Biostatistical Agency, Health Services Command, Fort Sam Houston, Texas. Without her patience, understanding and technical expertise this research effort would not have been possible.

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CHAPTER I

INTRODUCTION

Conditions Which Prompted Study

The study of stress or fatigue fractures of the lower extremities dates as far back as 1855 when they were described by the German military surgeon, Briethaupt.[1] Later in 1897, they were formally recognized when Stechow was able to identify them radiographically.[2] Since that time numerous studies have been conducted highlighting the predisposing factors, etiology and cost (primarily with respect to the military) of these injuries. Recently, these studies have been directed more towards prevention. With all of this research, however, stress fractures remain the leading cause of disability separation among U.S. basic trainees (APPENDIX A) and the fifth most frequently sustained injury requiring hospitalization among the same population (APPENDIX B). These findings, coupled with an unusually high incidence of stress fractures among basic trainees at Fort Knox, Kentucky, in early 1983, provided the impetus for this study.

Although research concerning prevention is limited and to an extent speculative, encouraging results have been achieved in reducing the incidence of stress injuries at isolated military installations. Scully, during a test at Fort Knox in 1974,

achieved a 66 percent reduction in the rate of stress fracture (4.8 percent to 1.6 percent) merely by eliminating running, jumping, and double timing during the third week of training.[3] Ozborn identified the 30-inch military stride as the cause of lower extremity stress fractures among shorter people, primarily women. Shortening the marching stride to one easily accommodated by the shortest people in the formation would contribute to a reduction in the incidence of stress fractures.[4] Prescreening evaluations that focus on factors which predispose individuals to stress injury[5] and using pretraining physical development programs to prepare individuals for the rigors of basic training[6] also have demonstrated reduction of the incidence of stress fractures in basic trainees. Unfortunately, these remedies have been applied only on a limited scale, mostly at isolated Basic Training Centers (BTC) in conjunction with the aforementioned studies and never to all BTCs within The Training and Doctrine Command (TRADOC).

The only notable exception to the isolated use of remedies has been the mandated use of running shoes in lieu of boots for all physical training (PT) of basic trainees throughout TRADOC.[7] This change largely was due to the research of Bensel[8] and deMoya.[9] They demonstrated the inferiority of the army boot to a running shoe in terms of flexibility, shock absorption and impact cushioning, factors which contribute to the development of stress factures. Though there has been no confirmation through experimental studies that this transition in footwear has

resulted in a significant reduction in stress fractures, Kersey indicates it has had a pronounced effect especially in the reduction of metatarsal and calcaneous stress injuries.[10] The literature repeatedly points that significant reduction in the overall injury rate will be achieved only by multiple application of remedies and not merely by a single alteration to the present PT program.[11]

Why then haven't these remedies been instituted? The traditional rationalization that injuries are a normal part of military training with its demanding schedule of marching, drilling and physical conditioning is increasingly more difficult to accept. These injuries are a significant problem resulting in loss of manpower and training time as well as increased cost of medical care. Even if the incidence of these injuries could be reduced only slightly, it could mean large benefits to the military both monetarily and in terms of troop productivity.[12] It seems that the Department of the Army (DoA) and specifically TRADOC are not convinced that this problem is significant.

The purpose of the present study was to establish the significance of this problem by determining the potential cost savings, defined in the study, which could be realized by implementing known effective remedies to reduce the incidence of lower extremity stress fractures sustained by basic trainees.

Statement of Research

To determine the potential cost savings, as defined, to be realized by the Department of the Army with the CONUS-wide

implementation of known remedies designed to reduce the incidence of lower extremity stress fractures frequently sustained by U.S. Army basic trainees in the conduct of physical training (PT) which necessitates inpatient treatment and results in trainee recycling or separation.

Criteria

The potential cost savings will be 60 percent of the sum of the following cost components:

a. Reception station costs for those trainees who are separated or retired from the service as a result of stress fractures.

b. The training investment, in terms of the cost of training days to include pay and allowances, which is lost in those basic trainees who were separated or retired from the service as a result of stress fracture.

c. Pay and allowances disbursed to basic trainees while in a nonproductive capacity, convalescing from stress fractures or waiting final disposition.

d. Medical care costs associated with the orthopedic bed days accumulated by basic trainees who sustained stress fractures.

e. Disability payment awarded to individuals temporarily or permanently retired from active duty as a result of stress fractures.

f. Severance pay disbursed to individuals involuntarily separated from the service as a result of stress fractures.

Assumptions

1. The time period included in this study (1 January 1983 - 30 April 1983) is representative of the normal incidence of lower extremity stress fractures.

2. The identified remedies could be implemented at TRADOC BTCs with minimal economic impact on present basic training practices.

3. TRADOC has not instituted the remedies described here to reduce the incidence of lower extremity stress fractures due to perceived insignificance in terms of potential cost savings associated with these remedies.

4. The remedies identified in this study, if implemented CONUS-wide, would reduce the current incidence of stress fractures by 60 percent. Based primarily on the 66 percent reduction achieved by Scully, this 60 percent figure represented the author's conservative assessment of the effectiveness of these remedies. The potential cost savings associated with implementation would, therefore, be 60 percent of the costs identified in this study that presently are associated with these injuries.

5. The data provided by the TRADOC weight study are accurate and comprehensive with regard to capturing all basic trainees who, during the specified time window, were separated or recycled due to medical reasons.

6. All basic trainees who were hospitalized with stress fractures were coded for record as pathological fractures (code 7331 in the International Classification of Disease 9th revision) and not as traumatic fractures.

Limitations

1. Only those stress fractures which resulted in inpatient treatment in a medical treatment facility (MTF) were included in this study. It is recognized that a number of stress fractures (overuse injuries) sustained during basic training are treated on an outpatient basis. However, the Patient Administration Systems and Biostatistical Agency (PASBA), Health Services Command, the primary source of data for this study, does not capture information concerning outpatient treatment.

2. Stress fracture or pathological fracture as coded in the International Classification of Disease (ICD 9th revision) was the only diagnosis tracked in this study. The incidence of other overuse injuries also may be favorably effected by the application of the suggested remedies.

3. Only those stress fractures which were sustained and diagnosed during the time period of this study were included. Cost considerations associated with those injuries which extended beyond the specified time window were included in the final cost figure. For example, disability payments resulting from an injury sustained during the study time frame but paid beyond the 30 April cutoff were included.

4. The components of the final cost savings figure were limited to the following:

a. The training investment in a trainee up to the time of an injury which necessitated inpatient treatment and resulted in recycling or separation.

b. Pay and allowances disbursed to a trainee during the nonproductive sick days associated with an injury pending final disposition, i.e., days in a hospital being treated (bed days) or convalescent days following treatment.

c. Disability payments awarded to a trainee who was medically discharged as a direct result of injury sustained during the specified window.

d. Severance Pay or that pay which was awarded to those trainees who were medically discharged with insufficient disability to qualify for temporary or permanent retirement.

e. The medical costs derived from product of the cost per bed day of an orthopedic patient and the number of bed days accumulated by basic trainees sustaining stress fractures during the study time window.

Definitions

Stress Fracture - End stage of a process (as opposed to an event, i.e., a traumatic injury) which involves the remodeling of bone following stress induced damage. This process initially involves a weakening of the effected area as damaged bone is

removed in preparation for the deposit of new bone. Continued stress to the effected area during this process leads to increased increments of stress induced damage and further weakening which eventuate in the development of a fracture.[13]

Physical Training - Those basic training activities (marching, running and calisthenics) designed to increase muscular strength and endurance.

Sick Day - A day spent on inpatient status (bed day) in a hospital or on convalescent leave following a stay in a hospital awaiting final disposition.

TDRL - Temporary Disability Retirement List - A mechanism by which service members found to be unfit for continued service may be separated from active duty. These individuals must meet the same requirements for permanent retirement, however, their particular disability has not stablized and may reverse or worsen in severity over a relatively short period of time. This mechanism calls for frequent reevaluations (not more than 18 months) for up to five years. During this period individuals with 30 - 50 percent disability are compensated monthly at a rate of 50 percent of their base pay. Those with greater than 50 percent disability are compensated with a like percentage of their base pay.[14]

Permanent Retirement - Mechanism by which an individual who has a stablized disability that renders him/her unfit for continued active duty is separated. This procedure requires a

disability assessment of greater than 30 percent. This individual then receives a monthly compensation of a like percentage of his/her base pay until they die.[15]

Severance Pay - A one-time payment for those individuals separated from service with a stablized medical disability less than 30 percent. This payment amounts to two months of base pay for every year of active duty (minimum of six months) completed at the time of separation. Those individuals who fall into the above disability range but have less than six months of active duty are tagged "separated with severance pay" for record only but receive no monetary compensation.[16]

CHAPTER I

Footnotes

[1] Angus M. Mcbryde, Jr., "Stress Fractures in Atheletes," Sports Medicine 3 (September/October 1975): 212.

[2] J. E. Taunton, D. B. Clement and D. Weber, "Lower Extremity Stress Fractures in Athletes," The Physician and Sports Medicine 9 (January 1981): 78.

[3] Thomas J. Scully and Gerald Besterman, "Stress Fracture - A Preventable Training Injury," Military Medicine 147 (April 1982): 287.

[4] Mary S. Ozburn and James W. Nichols, "Pubic Ramus and Adductor Insertion Stress Fractures in Female Basic Trainees," Military Medicine 146 (May 1981): 334.

[5] Carolyn K. Bensel and Robert N. Kish, Lower Extremity Disorders Among Men and Women in Army Basic Training and Effects of Two Types of Boots. {Natick: US Army Natick Research & Development Laboratories, (1983)} p. 83.

[6] Dennis M. Kowal, The Nature and Causes of Injuries in Female Recruits Resulting From an 8-Week Physical Training Program {Natick: US Army Research Institute of Environmental Medicine, (1979)} p. 7.

[7] Telephone Interview with Major Winsted, Training and Doctrine Command, Basic Entry Training Division, Fort Monroe, Virginia, 4 May 83.

[8] Bensel et al., Lower Extremity Disorders Among Men and Women in Army Basic Training and Effects of Two Types of Boots, p. 78-80.

[9] Richard G. deMoya, "A Biomechanical Comparison of the Running Shoe and the Combat Boot," Military Medicine 147 (May 1982): 382.

[10] Interview with LTC Douglas Kersey, Chief, Physical Therapy, Ireland Army Community Hospital, Fort Knox, Kentucky, 3 May 1984.

[11] deMoya, "A Biomechanical Comparison of the Running Shoe and the Combat Boot,": 381.

[12] Bruce H. Jones, "Overuse Injuries of the Lower Extremities Associated with Marching, Jogging, and Running: A Review," Military Medicine 148 (October 1983): 783.

[13]Scully, "Stress Fracture - A Preventable Training Injury," p. 286.

[14]Army Regulation 635-40. "Physical Evaluation for Retention, Retirement of Separation." Headquarters, Department of the Army, Washington, DC. 1 August 1982 with Changes 1 and 2.

[15]Ibid., p. 7-3.

[16]Ibid.

CHAPTER II

REVIEW OF LITERATURE

Since a 1966 study published by Gilbert and Johnson, numerous articles concerning lower extremity overuse injuries, primarily stress fractures, have appeared in the literature. These studies have focused mostly on the association of these injuries with military training. However, with the current physical fitness movement sweeping the country, concern with these kinds of injuries has been increasing in the civilian population.[1] Early studies were focused primarily on the extent of the problem and the cause or etiology. Within the last ten years prevention of these insidious injuries has become an important consideration.[2]

Military trainees remain the primary population afflicted with stress fractures. The demanding physical requirement of basic training and the poor physical condition normally found in new recruits are obvious contributing factors to the high incidence of stress fractures in this population.

Before reviewing ways to prevent these injuries, one must first examine the purpose of the physical training aspect of the basic training program. It is designed to develop physical strength and endurance needed to sustain a soldier in combat.[3] Keeping this end in mind, one must then ask if there are methods

other than the present program with its associated incidence of stress fractures that could achieve the same end while reducing the incidence of injury?

The present basic training program involves a one-hour exercise session, split between calisthenics and running, six days a week for seven weeks. Local commanders, except for special test programs, can add to but not subtract from the time spent on physical training or its intensity.[4] Beyond this time dedicated solely to exercise, the basic training program involves a significant amount of marching. Most of the literature attributes stress fractures to the rapid onset of a training program which does not allow progressive exposure to stress and development of tolerance in a population, not in good physical condition.[5] This daily training program does not allow the musculoskeletal system to accommodate to stress. The results in some instances are stress fractures or lesser overuse injuries. The literature is unclear on the question of intensity and frequency of exercise in the development of muscular strength and endurance. It appears that an alternating day workout schedule as opposed to daily workouts can achieve similar or better results in terms of strength and endurance. The central point seems to be that more training is not necessarily better and intense workouts must be balanced by sufficient rest in order to achieve optimal results.[6]

The concept of sufficient rest lends support to Scully and Worthen, who suggest incorporating rest periods in the training

regimen as a means of reducing the incidence of stress fractures. Scully, during test programs at Fort Knox, Kentucky, and Fort Bliss, Texas, eliminated running, jumping and double-timing during the third week of training. This significantly reduced the incidence of lower extremity stress fractures.[7] Worthen, during studies at Fort Leonard Wood, Missouri, discovered a reduced occurrence rate of stress fratures in units which, during the first three weeks of training, separated blocks of physical training and drill and ceremony and limited periods of intense training to no more than two hours.[8] Both of these research efforts, incorporating sufficient rest to allow bone accommodation and reconstitution, posed no compromise to the physical conditioning achieved by the test groups.

Ozburn conducted two studies at Fort Jackson which indicated the association of increased stress fractures in short trainees, primarily women, who were forced to comply with the 30 inch military step. Neither study was conclusive. However, placing the shortest trainees at the front of units during road marches and allowing these soldiers to use a stride length consistent with their height appeared to reduce incidence of stress reactions. In these cases, physical stature apparently had more impact than physical conditioning.[9]

The concept of developing criteria against which new recruits could be evaluated in an effort to predict whether they would successfully complete training was tested by Kowal et al. in 1982.[10] Many of the factors applied in Kowal's study, such

as comparative fitness, body composition, and strength, were also considered by other authors to evaluate susceptability to stress injuries. Although the prescreening model developed by Kowal produced a relative improvement of only 16 percent accuracy in predicting attrition as compared to no screening, it was important when escalating costs of manpower recruitment and training were considered.[11]

If prescreening revealed an anatomical defect e.g., high arch[12] or foot angulation[13], which predisposed a recruit to stress fracture, a corrective orthotic device could be applied. However, even if the recruit were healthy and normal, repetitive excessive loading of the legs, common in basic training programs, could fatigue muscles and ligaments and cause the bones to absorb more stress than usual. Bone remodeling and subsequent fracture would ensue.[14]

Another remedy was proposed by Gilbert and Johnson in their 1966 study and subsequently was supported by numerous other studies. They suggested a special training unit for recruits who were overweight or physically weak, that is, recruits who were particularly susceptible to stress fractures.[15] These recruits would follow a special exercise program designed to build them up and prepare them for the rigors of the regular training program. Candidates for this program would be those recruits who failed to meet minimum standards on an initial physical condition evaluation. The remedial training program would be followed for

a specified period of time in the interest of cost containment. If the individual still was unable to meet the minimum standard, he/she would be separated.

A variation of the corrective conditioning concept has been instituted at Fort Knox. Project Thunderbolt is a program which identifies trainees who initially are unable to meet upper body strength criteria. These trainees are subjected to a strength development program for up to three weeks before beginning the basic training cycle. This program, however, does not provide for mandatory separation. If a recruit still is unable to meet the minimum strength prerequisites following the three week period, he/she enters basic training.[16]

Trainee and cadre education is a crucial factor in reducing the incidence of overuse injuries.[17] This education should include the causes and early symptoms of overuse injuries as well as methods, e.g., body mechanics of correct running and marching technique, by which one may reduce susceptibility to overuse injuries. Kersey, through the introduction of such an education program at Fort Knox, Kentucky, has achieved some success in reducing the incidence of overuse injuries.[18]

All of the remedies mentioned here have demonstrated some contribution toward the reduction in the incidence of lower extremity overuse injuries (primarily stress fractures) in basic trainees. Several researchers in this area agree, however, that due to the differences in the etiology of lower extremity disorders, any profound impact on a reduction of the incidence of

these injuries is not going to occur with the application of a single remedy, i.e., using running shoes as opposed to boots for PT. Rather, a multidimensional approach is prescribed which incorporates a number of these remedies: prescreening evaluations, modification of the PT regiments, cadre trainee education and the use of special remedial training units.[19]

The remedies described have been instituted in varying degrees at some of the BTCs. Considering the demonstrated effectiveness of these remedies, it must be assumed that the DoA and TRADOC still are not aware of the potential cost savings which could be realized from the universal application of these remedies. A tally of these cost savings may be enlightening and serve to alter this line of thinking.

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Footnotes

[1] Louis Vidt, James Mark, and Frederick Brown, "Fatigue Fractures, A Literature Review," Journal of the American Podiatry Association 68 (May 1978): 326.

[2] Thomas J. Scully and Gerald Besterman, "Stress Fracture - A Preventable Training Injury," Military Medicine 147 (April): 285.

[3] Robert G. Boyko, "Comparison of Weight Training and Calisthenic Exercise Programs in Developing Strength and Muscular Endurance in United States Army Recruits," (Thesis in Physical Education, Pennsylvania State University, 1983), p. 2.

[4] Ibid.

[5] Dennis M. Kowal, The Nature And Causes of Injuries in Female Recruits Resulting From and 8-Week Physical Training Program, {Natick: US Army Research Institute of Environmental Medicine, (1979)} p. 5.

[6] Boyko, "Comparison of Weight Training and Calisthenic Exercise Programs in Developing Strength and Muscular Endurance in United States Army Recruits," p. 29.

[7] Scully and Besterman, "Stress Fracture - A Preventable Training Injury," : 287.

[8] Bruce M. Worthen, and Barney A. D. Yanklowitz, "The Pathophysiology and Treatment of Stress Fracture in Military Personnel," Journal of the American Podiatry Association 68 (May 1978): 325.

[9] Mary S. Ozburn and James W. Nichols, "Pubic Ramus and Adductor Insertion Stress Fractures in Female Basic Trainees," Military Medicine 146 (May 1981): 334; and Kent A. Reinker and Susan Ozburn, "A Comparison of Male and Female Orthopaedic Pathology in Basic Training," Military Medicine 144 (August 1979): 532.

[10] Dennis M. Kowal et al., Analysis of Attrition Retention and Criterion Task Performance of Recruits During Training {Natick: US Army Research Institute of Environmental Medicine (1982)} p. 1.

[11] Ibid., p. 22.

[12] Stanley R. James, Berry T. Bates, and Louis R. Ostering, "Injuries to Runners," American Journal of Sports Medicine 6 (February 1978): 44.

[13] Richard G. deMoya, "A Biomechanical Comparison of the Running Shoe and the Combat Boot," Military Medicine 147 (May 1982): 381.

[14] J. E. Taunton, D. B. Clement, and D. Weber, "Lower Extremity Stress Fractures in Athletes," The Physician and Sports Medicine 9 (January 1981): 85.

[15] Richard S. Gilbert and Howard A. Johnson, "Stress Fractures in Military Recruits-A Review of Twelve Years' Experience," Military Medicine 131 (August 1966): 720-21; and Dennis M. Kowal, The Nature and Causes of Injuries in Female Recruits Resulting From an 8-Week Physical Training Program {Natick: US Army Research Institute of Environmental Medicine, (1979)} p. 7.

[16] Telephone Interview with CPT Altobello, Operations Officer, 4th Training Brigade, Fort Knox, Kentucky, 30 May 1984.

[17] Scully, "Stress Fracture - A Preventable Training Injury,": 285; and Gilbert and Johnson, "Stress Fractures in Military Recruits-A Review of Twelve Years' Experience,": 720.

[18] Interview with LTC Douglas Kersey, Chief, Physical Therapy, Ireland Army Community Hospital, Fort Knox, Kentucky, 3 May 1984.

[19] deMoya, "A Biomechanical Comprison of the Running Shoe and the Combat Boot,": 381.

CHAPTER III

DISCUSSION

Methodologies

Between 1 January 1983 and 30 April 1983, TRADOC conducted a study titled Weight Standards for Enlistment and Retention in the Army (APPENDIX C). A part of this study was the identification of all basic trainees who were recycled or separated for medical reasons during that time frame. A total of 1,715 trainees out of 45,111 trained fell into this category.[1] A list of these individuals was sent to the Patient Administration System and Biostatistical Agency (PASBA) of Health Services Command (HSC) to identify trainees who had been hospitalized and the primary diagnoses. These data were sorted by frequency of diagnosis to determine the most prevalent causes for hospitalization among this population (APPENDIX B). Of these diagnoses, stress fractures ranked 5th. Other information derived from these data were approximate time in service of the trainee at time of admission, number of sick days, number of bed days and final disposition of the trainee (return to duty, separation with or without severance pay or TDRL).

Time in service information at the time of hospitalization served as the basis for calculation of the training investment in that individual at the time of injury. This investment included

costs associated with processing a trainee through a reception station and costs associated with each day of training to include pay and allowances. Cost information specific to each BTC was secured from TRADOC (APPENDIX D). This information was used to develop a cost per training day (including pay and allowances of $33 per day) at each BTC (Table 1). Lost training investment for those trainees who were separated from the service for medical reasons was the sum of reception station costs ($768 per trainee[2]) plus the product of the time in service of the trainee at the time of injury and the cost per training day at the respective BTC.

TABLE 1

BTC COST PER TRAINING DAY

BTC	COST/DAY
Fort Sill	$ 89.00
Fort McClellan	$105.00
Fort Knox	$123.00
Fort Jackson	$100.00
Fort Dix	$116.00
Fort Bliss	$170.00
Fort Leonard Wood	$ 99.00
Fort Benning	Data not available

Data were insufficient to determine how many training days had to be repeated as a result of recycling. Therefore, this loss of training investment could not be figured into the potential savings figure.

Cost associated with each sick day was limited to the trainee's pay allowances. It was recognized that time spent waiting final disposition need not be nonproductive time. Members of Medical Hold Companies in military hospitals awaiting final medical board action can and do provide valuable services to the hospital. Assessing a value of this service, however, was difficult and beyond the scope of this study. Sick day costs were the product of total sick days and a trainee's daily pay and allowances ($33 per day).

The assessment of costs associated with medical treatment was not as straight forward as the other cost factors described here. The records of 26 basic trainees sustaining stress fractures at Fort Knox were reviewed to ascertain the medical costs associated with these injuries. Each record reflected a unique combination of length of stay, physical therapy, surgery and drug therapy as well as x-ray and bone scan procedures. It was not possible to develop a representative cost per patient which could be applied to all patients included in the study. Alternatives to this method were 1) to attempt to secure the inpatient record of each trainee involved in this study and develop a unique cost for medical treatment rendered to each patient or 2) to utilize Uniform Chart of Accounts data to

develop a weighted average cost per orthopedic bed day which could be assessed against each bed day accumulated by the patients identified in this study. The first alternative was not feasible considering the lack of sufficiently detailed data. The second alternative, although sacrificing accuracy, proved to be the only feasible way to assess medical costs associated with these patients. Total medical cost was the product of the total number of bed days accumulated by stress fracture patients identified in this study and the weighted cost per bed day (APPENDIX E).

Assessing costs associated with separation of a trainee for medical reasons presented a dilemma, especially concerning TDRL payments. TDRL payments represent a portion of base pay awarded to an individual based on the percent of physical disability assigned by a Physical Evaluation Board (PEB). This disability assessment is subject to reevaluation at least every 18 months up to five years. During reevaluations the individual may be 1) continued on TDRL 2) found fit for duty and afforded the opportunity of returning to active duty or have his/her monthly disability payments stopped, 3) assessed at a lower percent of disability which may result in an adjustment in the monthly disability payment, 4) placed on permanent retirement at a fixed disability payment for the rest of his/her life or 5) separated with severance pay if the disability is found to be less than 30 percent.

To project the total costs associated with a training injury that resulted in TDRL or permanent retirement, the following information was secured from the US Army Physical Disability Agency, Walter Reed Army Medial Center, Washington, D.C.: 1) average time on TDRL status until a fit for duty or permanent retirement assessment is made, 2) percent of those on TDRL who were eventually found fit for duty or permanently retired. This information is contained on Table 2.

TABLE 2

TDRL DISPOSITIONS

	PERCENT	AVERAGE TIME ON TDRL IN MONTHS
Fit For Duty	22	16
Permanent Retirement	17	21
Separated With Serverance Pay	53	17
Separated Without Severance Pay	2	15
Continued on TDRL	6	12
	100	

Based on information secured from the U.S. Army Physical Disability Agency, Walter Reed Army Medical Center, Washington, D.C., 1979-1983.

Percent disability awarded to individuals included in this study who were placed on TDRL was determined, to the extent possible, by direct liaison with the respective MTF Physical

Evaluation Board Liaison Officers (PEBLO). This disability assessment dictated the monthly compensation paid to a separated service member while on TDRL status which in turn was used in present value computations[3] to project the TDRL costs to the government.

An assumption was made that any individual who, according to historical patterns, eventually would be permanently retired, would be carried in that status at the same percent disability rating that had been assigned while on TDRL. Present value analysis was performed using the appropriate monthly disability compensation to ascertain the projected cost to the government for the balance of that individual's life. Life span information from The National Center For Health Statistics was used to determine the length of time these payments would continue considering an average trainee age of 21 years. Again, an assumption was made that, although the individual had been found permanently disabled, this disability would not cause a significant deviation from the normal life span of a US citizen.

The final cost savings potential then was 60 percent of the sum of all the aforementioned expenses adjusted to an annual basis.

Findings

From 1 January 1983 - 30 April 1983, 45,111 basic trainees were cycled through TRADOCs eight BTCs. Out of the group, 62 individuals sustained stress fractures which resulted in

inpatient treatment and subsequent recycling or separation. Table 3 reflects the incidence and BTC distribution of these injuries.

TABLE 3

STRESS FRACTURE (SF) DISTRIBUTION AND INCIDENCE

BTC	# OF TRAINEES CYCLED	# OF TRAINEES ADMITTED FOR SF	INCIDENCE OF SF	% OF SF
Fort Sill	4451	1	.0002	1.6
Fort McClellan	4119	0	0	0
Fort Knox	7129	28	.0039	45.2
Fort Jackson	11778	4	.0003	6.5
Fort Dix	3421	2	.0006	3.2
Fort Bliss	1287	1	.0002	1.6
Fort Leonard Wood	9977	25	.0025	40.3
Fort Benning	2949	1	.0003	1.6
TOTAL	45111	62		100

The disposition of the 62 stress fracture casualties is found in Table 4. There were 34 individuals who were separated with severance pay or placed on the TDRL. They accounted for 2,056 lost training days. In terms of dollars, this loss of training investment totaled $26,112 (34 individuals x $768) in reception station cost and $233,796 in Basic Training costs (number of days in basic training at the time of injury x cost per training day at each respective BTC). Projected annually, this represents a loss of training investment of $779,724 due to stress fractures {(26,112 + $233,796) x 3}.

TABLE 4

DISPOSITION OF STRESS FRACTURE CASUALTIES

DISPOSITION	NUMBER OF TRAINEES
TDRL	25
Returned to Duty (Recycled)	13
Separated With Severance Pay	9
Non-medical Separation	15
TOTAL	62

Trainees who were eligible for severance pay by virtue of assigned disability (less than 30 percent) did not qualify in terms of time in service (less than six months). These individuals were recorded as separated with severance pay when in fact they received no separation allowance.

The 62 basic trainees hospitalized for stress fracture injuries accounted for 517 bed days and 2,861 sick days. This translates into $94,413 in sick day pay and allowances (2,861 days x $33 per day) and $125,114 in medical costs, considering a weighted cost of $242 per orthopedic bed day (517 days x $242 per day). These figures projected annually total $283,239 and $375,342 for sick day and medical costs respectively.

The final disposition of 25 of the 62 basic trainees in this study was placement on TDRL. This figure would equal 75 if projected to an annual basis. The statistical information in Table 2 was applied and the assumption was made that all the trainees in question fell into the 50 percent payment bracket.

(NOTE: All but one of the 25 trainees placed on TDRL were awarded 40 percent disability. This made them eligible to receive a monthly payment equal to 50 percent of an E-1's base pay or $287). Table 5 shows the present value computation of an annuity of $287 @ 6 percent annual interest compounded monthly for the projected TDRL time frame.

TABLE 5

Present value Computation for TDRL Payments
(Applying a Monthly Annuity of $287)

DISPOSITION	# OF TRAINEES	# OF MONTHS TDRL (ea)	PRESENT VALUE
Fit for Duty	16	16	$ 70,793
Permanent Retirement	13	21	$ 74,573
Separated with Severance Pay	40	17	$187,582
Separated without Severance Pay	2	15	$ 8,317
Continued on TDRL	4	12	$ 13,405
TOTAL	75		$354,670

The final cost component, that of disability payments to those permanently retired, was developed using the projected annual figure of 13 trainees identified in Table 5 which, according to historical data, would convert to Permanent Retirement status. Assuming 1) an average age of 21 years (average of the 62 trainees sustaining stress fractures), 2) an anticipated 55-1/2 years of remaining life (from National Center for Health Statistics, US Department of Health and Human

Services), and 3) the continuation of a 40 percent disability assessment the following present value computation was conducted. A $230 (40 percent of $574) annuity for 666 months (55.5 x 12) at 6 percent annual interest compounded monthly would yield a present value of $44,562. This figure applied to the 13 trainees projected to be permanently retired would result in a potential cost of $579,306.

The total projected annual cost of stress fractures is depicted in Table 6.

TABLE 6

Total Annual Cost Associated With Stress Fractures

Cost Component	Cost
Training Investment	$ 779,724.00
Sick Day Costs	$ 283,239.00
Medical Costs (Inpatient Bed Days)	$ 375,342.00
Disability Retirement Costs:	
Temporary	$ 354,670.00
Permanent	$ 579,306.00
TOTAL	$2,372,281.00

A 60 percent effectiveness rate of the remedies identified in this study, represents a potential annual savings of $1,423,369 with little or no economic impact on the current basic training program.

Two other items of interest surfaced during the development of this study. However, neither had direct impact on this project's charter. First, 53 of the 62 stress fractures included in this study occurred at only two of the BTCs: Fort Knox (28) and Fort Leonard Wood (25). Second, all but one of the trainees who were ultimately placed on TDRL were processed at Fort Knox. Several inferences concerning training practices, coding procedures and PEB processing could be made from these findings. Definitive research in these areas was beyond the perview of this project.

CHAPTER III

Footnotes

[1]Telephone Interview with David Messersmith, Training and Doctrine Command, Data Processing Field Office, Fort Monroe, Virginia, 9 May 1984.

[2]Telephone Interview with Jane Coppock, Headquarters, Training and Doctrine Command, Fort Monroe, Virginia, 9 May 1984.

[3]R. F. Salmonson, Roger H. Hermanson, and James Don Edwards, A Survey of Basic Accounting (Homewood: Richard D. Irwin, Inc., 1977), pp. 150-151.

CHAPTER IV

CONCLUSION AND RECOMMENDATION

The Department of the Army, through modification of the existing basic training program, could save approximately $1.5 million annually. This figure represents 60 percent of those costs currently associated with stress fractures.

The proposed modifications have resulted in a reduced incidence of stress fractures in test demonstrations. Though these proposals pose little or no economic impact on existing BTC practices, they have not been instituted universally. Specifically, these modifications include:

1) A prescreening program which examines trainees for anatomical idiosyncricies that may predispose them to stress fractures, i.e., excessive arch or foot angulation. Orthotic appliances would be applied to correctable defects prior to the initiation of training.

2) The administration of a physical conditioning test prior to the initiation of training to evaluate a new recruit's strength and endurance status. If established fitness standards could not be met, the recruit would be enrolled in a strength/endurance development program of finite length. Failure to meet the prescribed standards following this program would result in separation.

3) Institution of a training program to: a) educate both trainees and cadre on the causes and symptoms of stress fracture and b) instruct same on body mechanic techniques which reduce the potential for developing stress reactions.

4) Incorporate adequate rest into the BTC program to allow for bone reconstitution, i.e., eliminate all running, extended marching and jumping exercise during the third week of training or adopt an alternating day exercise schedule as opposed to a daily PT regimen.

5) Make allowances for variation of stride length in both running and marching that accommodates the shortest people in a formation. This would be facilitated by placing the shorter trainees at the front of formations and allowing those individual(s) to set the stride length.

It must be emphasized that the full potential for cost savings would not be achieved with the application of one of the proposed remedies but rather through an approach which encompasses the application of several or all of these recommendations at all BTCs. It should also be noted that the CONUS-wide institution of these remedies also would serve to reduce the incidence of other lesser stress reactions which do not carry the economic impact of stress fractures.

It is further suggested that additional research be directed toward 1) the inequitable distribution of stress fractures among BTCs and 2) the basis of the relatively high number of TDRL stress fracture dispositions occurring at Fort Knox.

CHAPTER V

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APPENDIX A

MEDICAL CAUSES FOR SEPARATION AMONG BASIC TRAINEES FY 83

BASIC TRAINEE INJURY DATA
CONUS, FY 83

EXPLANATORY NOTES:

1. REPORTS:

A. (1) PRIMARY DIAGNOSES SORTED BY FREQUENCY
(2) PRIMARY DIAGNOSES SORTED BY PRIMARY DIAGNOSIS CODE AND REPORTED BY TYPE OF CASE AND TYPE OF DISPOSITION

(EXCLUDES CASES WITH TYPE DISPOSITION OF "TRANSFER TO ANY MEDICAL TREATMENT FACILITY")

B. (1) UNDERLYING CAUSE OF DISABILITY SEPARATION SORTED BY FREQUENCY

(2) UNDERLYING CAUSE OF DISABILITY SEPARATION SORTED BY UNDERLYING CAUSE DIAGNOSIS CODE AND REPORTED BY TYPE OF CASE

C. (1) PRIMARY DIAGNOSES SORTED BY FREQUENCY
(2) PRIMARY DIAGNOSES SORTED BY PRIMARY DIAGNOSIS CODE AND REPORTED BY TYPE OF DISPOSITION AND LENGTH OF PERIOD

(DATA ARE FOR THOSE CASES WITH TYPE CASE OF "ACCIDENTAL INJURY OCCURRING DURING SCHEDULED TRAINING OTHER THAN COMBAT (MANEUVERS) AND EXERCISES" (INCLUDING BASIC TRAINING, ASSAULT COURSES, ETC.)

2. DATA INCLUDES:

CONUS MEDICAL TREATMENT FACILITIES (EXCLUDING HAWAII, PANAMA, AND ALASKA)
FISCAL YEAR 1983 (OCT82-SEP83)
ACTIVE DUTY ARMY PERSONNEL (EXCLUDES USMA CADETS AND ARMY RESERVE/NATIONAL GUARD PERSONNEL)
GRADE OF E1
LENGTH OF SERVICE OF LESS THAN TWO (2) MONTHS

3. DATA EXCLUDES:

CASES FOR RECORD ONLY CASES)
ARMY PERSONNEL IN ABSENT SICK STATUS FOR ENTIRE PERIOD OF HOSPITALIZATION

4. ABBREVIATIONS:

DX — DIAGNOSIS CODE AS FOUND IN THE NINTH REVISION OF THE INTERNATIONAL CLASSIFICATION OF DISEASES (ICD-9)

NUMBER — NUMBER OF INSTANCES WITH THE SPECIFIED DIAGNOSES AS PRIMARY DIAGNOSIS OF THE UNDERLYING CAUSE OF DISABILITY SEPARATION.

DAYS — SICK DAYS

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TYPECASE -- TYPE CASE (ONLY APPLICABLE TO REPORTS A AND B)

INTINFL -- INTENTIONALLY INFLICTED NONBATTLE INJURY:
A. RESULTS OF INTERVENTION OF LEGAL AUTHORITY
B. ASSAULT OR INTENTIONALLY INFLICTED BY ANOTHER PERSON
C. INTENTIONALLY SELF-INFLICTED

ACC INJ5 -- ACCIDENTAL INJURY OCCURRING WHILE OFF DUTY (INCLUDES LEAVE, PASS, AWOL, AND OTHER OFF-DUTY)

ACC INJ6 -- ACCIDENTAL INJURY OCCURRING WHILE ON SCHEDULED (MANEUVERS AND EXERCISES)

ACC INJ7 -- ACCIDENTAL INJURY OCCURRING WHILE ON ALL OTHER SCHEDULED TRAINING (INCLUDING BASIC TRAINING, ASSAULT COURSES, ETC.)

ACC INJ8 -- ACCIDENTAL INJURY OCCURRING WHILE ON DUTY EXCEPT AS IN INJ6 AND INJ7 ABOVE

ACC INJ9 -- ACCIDENTAL INJURY, UNKNOWN WHETHER ON OR OFF DUTY

DIS CASE -- DISEASE CASE

OTH/UNK -- OTHER OR UNKNOWN

TYPEDISP -- TYPE DISPOSITION (APPLICABLE TO REPORTS A AND B)

DUTY -- TO DUTY
TO DUTY FROM TDRL
AWOL (DROPPED FROM ROLLS)

DIS SEP -- DISABILITY SEPARATION:
TO PDRL FROM TDRL
SEPN/RET UP AR 635-40:
PDRL
TDRL
SEPARATION WITH SEVERANCE PAY
SEPARATION WITHOUT SEVERANCE PAY
SEPN UP AR 635-200:
FAILURE TO MEET MEDICAL PROCUREMENT STANDARDS

DEATH -- MATERIAL DEATH
HOSPITAL DEATH

ADM SEP -- ADMINISTRATIVE SEPARATION:
NONDISABILITY SEPARATION OF PERSONNEL IDENTIFIED IN THE DRUG AND ALCOHOL ABUSE PREVENTION AND CONTROL PROGRAM AT OR AFTER TRANSFER OR REFERRAL TO VA OR OTHER NONMILITARY MTF

SEPN UP AR 635-200:
UNFITNESS OR UNSUITABILITY
EXPIRATION TERM OF SERVICE (ETS)
SEPN UP OTHER AR

OTHER -- OTHER TYPE OF DISPOSITIONS NOT LISTED ABOVE

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L-OF-SVC -- LENGTH OF SERVICE (ONLY APPLICABLE TO REPORT 6)

0-6DYS -- ONE WEEK OR LESS
7-31DYS -- OVER ONE WEEK, LESS THAN ONE MONTH
1-MO -- ONE MONTH, LESS THAN TWO

SOURCE: INDIVIDUAL PATIENT DATA SYSTEM (IPDS)

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PART [illegible] (ICD-9)

BASIC TRAINEE INJURY DATA
CONUS, FY 83

TOP 74 DIAGNOSES WITH HIGHEST FREQUENCIES

RANK	SPEC	DIAGNOSIS TITLE (ICD-9)	DSPC	DAYS TOTAL	DAYS MEAN
47	2951	SCHIZOPHRENIA, REMITTENT TYPE	1	209	209.00
48	7337	ALDINEUROSYNDROMY	1	241	241.00
49	7334	DISLOCATION AND SUBLUXATION OF FRACTURE	1	181	181.00
50	6825	OTHER CELLULITIS AND ABSCESS, HAND, EXCEPT FINGERS	1	22	22.00
51	7357	OTHER ACQUIRED DEFORMITIES OF ANKLE AND FOOT	1	34	34.00
52	7487	CONGENITAL ANOMALY OF RESPIRATORY SYSTEM, NEC	1	25	25.00
53	2959	SCHIZOPHRENIC PSYCHOSES NOS	1	49	49.00
54	8054	FRACTURE OF LUMBAR VERTEBRA, CLOSED	1	76	76.00
55	8052	FRACTURE OF DORSAL VERTEBRA, CLOSED	1	122	122.00
56	8151	FRACTURE OF METACARPAL BONE, CLOSED	1	36	36.00
57	8201	FRACTURE OF NECK OF FEMUR, TRANSCERVICAL, CLOSED	1	245	245.00
58	8202	FRACTURE OF NECK OF FEMUR, PERICERVICAL, CLOSED	1	158	158.00
59	8203	FRACTURE OF NECK OF FEMUR, PART NOS, CLOSED	1	141	141.00
60	3091	HYSTERIA	1	46	46.00
61	8412	FRACTURE OF FEMUR, LOWER END, CLOSED	1	130	130.00
62	8241	FRACTURE TIBIA AND FIBULA, UPPER END OR PART NOS, CLOSED	1	139	139.00
63	8243	FRACTURE OF TIBIA AND FIBULA, SHAFT, CLOSED	1	69	69.00
64	8261	FRACTURE OF ANKLE, BIMALLEOLAR, CLOSED	1	66	66.00
65	7840	LOCALIZED MENTAL DISORDER AFTER ORGANIC BRAIN DAMAGE NEC	1	44	44.00
66	8262	FRACTURE OF ANKLE, NOS, CLOSED	1	138	138.00
67	3171	PERSONAL ACCIDENTS MENORRHAGIA OR OTHER DISORDERS	1	62	62.00
68	8566	TEAR OF LATERAL CARTILAGE OF MENISCUS OF KNEE, CURRENT	1	177	177.00
69	8363	DISLOCATION OF PATELLA, SIMPLE	1	41	41.00
70	3535	BRACHIAL AMYOTROPHY	1	120	120.00
71	9583	ILL-DEFINED SPRAINS AND STRAINS, OTHER SPECIFIED SITES	1	116	116.00
72	8511	CEREBRAL LACERATION AND CONTUSION	1	245	245.00
73	9534	INJURY TO BRACHIAL PLEXUS	1	66	66.00
74	9537	INJURY TO LUMBAR NERVE, UNSPECIFIED	1	168	168.00
75	[illegible]	[illegible]	1	31	31.00
76	9220	MULTIPLE CONTUSIONS	1	97	97.00
		TOTAL	166	13232	77.57

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BASIC TRAINEE INJURY DATA
CONUS, FY 83

TOP 76 DIAGNOSES WITH HIGHEST FREQUENCIES

RANK	PREFERRED CAUSE	DIAGNOSIS TITLE (ICD-9)	DSPO	DAYS TOTAL	DAYS MEAN
1	7331	PATHOLOGICAL FRACTURE	29	2141	73.83
2	2959	ACUTE SCHIZOPHRENIC EPISODE	28	1473	52.61
3	2953	SCHIZOPHRENIA, PARANOID TYPE	12	565	47.08
4	7339	OTH DISORDERS OF BONE AND CARTILAGE NEC AND NOS	5	340	68.00
5	8402	SPRAIN, STRAIN CRUCIATE LIGAMENT OF KNEE	4	723	180.75
6	2956	RESIDUAL SCHIZOPHRENIA	3	152	50.67
7	2957	SCHIZOAFFECTIVE TYPE PSYCHOSIS	3	228	76.00
8	3439	TOXIC DIFFUSE GOITER	3	123	41.00
9	8242	FRACTURE OF ANKLE, LATERAL MALLEOLUS, CLOSED	2	324	162.00
10	2530	DIABETES MELLITUS WITHOUT MENTION OF COMPLICATION	2	116	58.00
11	7222	DISPLACEMENT OF INTERVERTEBRAL DISC SITE NOS	2	297	148.50
12	8210	FRACTURE OF FEMUR, SHAFT OR PART NOS, CLOSED	2	250	125.00
13	8262	FRACTURE OF OTHER TARSAL AND METATARSAL BONES, CLOSED	2	172	86.00
14	2958	SCHIZOPHRENIC PSYCHOSES NEC	2	80	40.00
15	8050	FRACTURE OF CERVICAL VERTEBRA, CLOSED	2	369	184.50
16	2570	ACUTE EFFECTIVE POLYNEUROPATHIES	2	239	119.50
17	4779	ASTHMA NOS	2	61	30.50
18	8209	UNSPECIFIED DISEASE DIAGNOSIS	2	105	52.50
19	3004	NEUROTIC DEPRESSION	2	75	37.50
20	3409	EPILEPSY NOS	2	224	112.00
21	3461	GENERALIZED CONVULSIVE EPILEPSY	2	55	27.50
22	0541	HERPES ZOSTER WITH OTHER NERVOUS SYSTEM COMPLICATION	1	99	99.00
23	2980	REACTIVE PSYCHOSES NEC, NOS	1	54	54.00
24	2962	MANIC-DEPRESSIVE PSYCHOSES, MANIC TYPE	1	49	49.00
25	3083	ADJUSTMENT REACTION, BRIEF DEPRESSIVE	1	20	20.00
26	3089	ADJUSTMENT REACTION NOS	1	13	13.00
27	2825	SICKLE-CELL ANEMIA	1	56	56.00
28	2010	LYMPHOID FORM LEUKEMIA, ACUTE	1	100	100.00
29	2979	PSYCHOSES NOS	1	69	69.00
30	3009	ANXIETY STATES	1	34	34.00
31	2619	GASTRITIS NOS	1	22	22.00
32	4538	PHLEBITIS, X-RAYS AND ENCEPHALOMYELITIS CAUSE NOS	1	157	157.00
33	3019	PERSONALITY DISORDER, NEC	1	17	17.00
34	6139	APLASIA BREAST	1	6	6.00
35	4439	PERIPHERAL VASCULAR DISEASE NOS	1	29	29.00
36	2969	MANIC-DEPRESSIVE PSYCHOSES, CIRCULAR TYPE, NOS	1	34	34.00
37	2960	MANIC-DEPRESSIVE PSYCHOSES NEC, NOS	1	34	34.00
38	5319	PEPTIC ULCER, CHRONIC OR NOS WITH HEMORRHAGE, SITE NOS	1	20	20.00
39	5339	PEPTIC ULCER, NOS	1	11	11.00
40	6332	ATHEROMA, EXTREMITIES NOS WITH MENTION OF OBSTRUCTIVE LESION	1	165	165.00
41	2629	DYSPLASIAS WITHOUT MENTION OF GOITER OR OTHER CAUSE	1	20	20.00
42	7161	TRAUMATIC ARTHROPATHY	1	79	79.00
43	7171	DERANGEMENT OF ANTERIOR HORN OF MEDIAL MENISCUS	1	156	156.00
44	7175	DERANGEMENT OF MENISCUS, NEC	1	274	274.00
45	2501	DIABETES WITH KETOACIDOSIS	1	88	88.00
46	7242	LUMBAGO	1	21	21.00

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APPENDIX B

FREQUENCY OF ADMISSION DIAGNOSIS AMONG BASIC TRAINEES

FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS
FROM THE INDIVIDUAL PATIENT DATA SYSTEM DATA BASE
WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

EXPLANATORY NOTES:

1. Reports:

   a. Top 29 primary diagnoses sorted by frequency

   b. Primary diagnoses sorted by diagnoses code

2. Data are for records from the Individual Patient Data System calendar year 1983 data base coded with social security numbers (SSN) that matched the SSN furnished by Ft Monroe.

3. Data are for inpatients, carded for record only (CRO) cases and absent sick cases (active duty Army personnel treated in a nonmilitary facility for the entire period of hospitalization).

4. Since a patient may have been discharged more than once during the specified time period, the frequency presented is the number of times the specified diagnoses was reported and not the number of people.

5. Diagnoses (DG) codes are as found in the Ninth Revision of the International Classification of Diseases (ICD-9).

SOURCE: Individual Patient Data System (IPDS)

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REPORT A

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PAGE 1 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

29 TOP DIAGNOSES

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
1	4659	ACUTE UPPER RESPIR ATORY INFECTN NOS	135
2	7340	FLAT FOOT	117
3	7367	OTHER ACQUIRED DE-FORMITY FOOT,ANKLE	102
4	4939	ASTHMA NOS	79
5	7331	PATHOLOGICAL FX	66
6	4860	PNEUMONIA NOS	36
7	7338	MALUNION AND NON-UNION OF FRACTURE	29
8	7092	SKIN FIBROSIS,SCAR	27
9	7193	RECURRENT DISLOCA-TION OF JOINT	25
10	7177	CHONDROMALACIA PATELLAE	24
11	7561	CONGENITAL ANOMALY OF SPINE	22
12	7546	VALGUS DEFORMITY OF FEET	21
13	7188	DERANGEMENT OF JOINTS NEC	20
14	7185	ANKYLOSIS OF JOINT	20
15	5509	INGUINL HERNIA NOS	19
16	7161	TRAUMATIC ARTHROP-ATHY	18
17	7295	PAIN IN LIMB	18
18	4019	ESSENTIAL HYPER-TENSION NOS	14

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PREPARED BY:
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FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

29 TOP DIAGNOSES

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
19	7339	DISORDERS OF BONE AND CARTILAGE NEC	14
20	0799	VIRAL INFECTN NOS	13
21	3451	GENERALIZED CONVULSIVE EPILEPSY	12
22	7547	CONGENITAL DEFORMITY OF FEET NEC	11
23	3891	SENSORINEURAL DEAFNESS	11
24	4620	ACUTE PHARYNGITIS	11
25	7245	BACKACHE NOS	10
26	7194	PAIN IN JOINT	10
27	7242	LUMBAGO	10
28	7802	SYNCOPE, COLLAPSE	10
29	4549	VARICOSE VEINS, LEG NOS	10
		TOTAL	916

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PAGE 1 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
1	0088	INTESTINAL INFECTN OTHER ORGANISM NEC	3
2	0340	STREP SORE THROAT	6
3	0520	CHICKENPOX	2
4	0541	GENITAL HERPES	2
5	0544	HERPES SIMPLEX,OPH THALMIC COMPLICATN	2
6	0709	VIRAL HEPATITIS NOS	2
7	0750	INFECTIOUS MONONUCLEOSIS	3
8	0781	VIRAL WARTS	1
9	0799	VIRAL INFECTN NOS	13
10	0985	GONOCOCCAL INFEC- TION OF JOINT	1
11	2133	BENGN NEOPLASM,RIB STERNUM, CLAVICLE	1
12	2134	BENIGN NEOPLASM, LONG BONES UPPER LIMB,SCAPULA	1
13	2138	BENIGN NEOPLASM, SHORT BONES, LEG	1
14	2140	LIPOMA	1
15	2170	BENIGN NEOPLASM, BREAST	2
16	2377	NEUROFIBROMATOSIS	2
17	2420	TOXIC DIFFUSE GOITER	3
18	2500	DIABETES MELLITUS WO COMPLICATION	4

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	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
19	2800	IRON DEFICIENCY ANEMIA	1
20	2824	.HALASSEMIAS	2
21	2826	SICKLE-CELL ANEMIA	1
22	2953	SCHIZOPHRENIA, PARANOID TYPE	3
23	2954	ACUTE SCHIZOPHRENIC EPISODE	9
24	2956	RESIDUAL SCHIZOPHRENIA	5
25	2959	SCHIZOPHRENIA NOS	1
26	2961	MANIC-DEPRESIV PSYCHOSIS,DEPRESD TYP	1
27	2965	MANIC-DEPRESSIVE PSYCHOSIS,CIRCULAR TYPE NOS	2
28	2966	MANIC-DEPRESSIVE PSYCHOSIS,NEC,NOS	1
29	2989	PSYCHOSIS NOS	2
30	3000	ANXIETY STATES	1
31	3012	SCHIZOID PERSONALITY DISORDER	1
32	3015	HYSTERICAL PERSONALITY DISORDER	1
33	3016	PERSONALITY DISORDERS NEC	5
34	3019	PERSONALITY DISORDERS NOS	2
35	3052	NONDEPENDENT SINGLE DRUG ABUSE WITH ALCOHOL	1

AGE 3 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
36	3070	STAMMERING AND STUTTERING	1
37	3089	ACUTE REACTION TO STRESS NOS	1
38	3094	ADJUSTMNT REACTION MIXED DISTURBANCE	2
39	3099	ADJUSTMENT REACTION NOS	1
40	3102	POSTCONCUSSIONAL SYNDROME	4
41	3110	DEPRESSIVE DISORDER NEC	1
42	3332	MYOCLONUS	2
43	3379	DISORDER AUTONOMIC NERVOUS SYSTEM NOS	1
44	3451	GENERALIZED CONVULSIVE EPILEPSY	12
45	3452	EPILEPSY,PETIT MAL	2
46	3453	EPILEPSY,GRAND MAL	2
47	3454	PARTIAL EPILEPSY WITH IMPAIRMENT OF CONSCIOUSNESS	1
48	3458	EPILEPSY NEC	1
49	3459	EPILEPSY NOS	5
50	3468	MIGRAINE NEC	2
51	3469	MIGRAINE NOS	8
52	3518	FACIAL NERVE DISORDER NEC	1
53	3530	BRACHIAL PLEXUS LESIONS	2

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PAGE 4 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
54	3540	CARPAL TUNNEL SYND	2
55	3542	LESION,ULNAR NERVE	1
56	3551	MERALGIA PARAES-THETICA	1
57	3553	LESION OF LATERAL POPLITEAL NERVE	1
58	3555	TARSAL TUNNEL SYND	1
59	3625	DEGENERATION,MACULA,POSTERIOR POLE	1
60	3627	HEREDITARY RETINAL DYSTROPHIES	4
61	3632	OTH,NOS FORMS,CHORIORETINITIS	1
62	3656	GLAUCOMA W OTHER OCULAR DISORDERS	1
63	3671	MYOPIA	3
64	3672	ASTIGMATISM	2
65	3673	ANISOMETROPIA AND ANISEIKONIA	1
66	3679	DSRDR REFRACTION, ACCOMMODATION NOS	5
67	3680	AMBLYOPIA	2
68	3682	DIPLOPIA	5
69	3699	VISUAL LOSS NOS	2
70	3710	CORNEAL SCARS AND OPACITIES	1
71	3716	KERATOCONUS	1
72	3718	CORNEAL DSRDR NEC	1
73	3724	PTERYGIUM	1

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PAGE 5 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WIT SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
74	3728	CONJUNCTIVAL DIS-ORDERS NEC	1
75	3771	OPTIC ATROPHY	1
76	3780	CONVERGENT CONCOM-ITANT STRABISMUS	3
77	3793	APHAKIA AND OTHER DISORDERS OF LENS	1
78	3794	ANOMALIES OF PUPILLARY FUNCTION	1
79	3795	NYSTAGMUS,OTH IRR-EGULAR EYE MOVEMNT	1
80	3812	CHRONIC MUCOID OTITIS MEDIA	1
81	3814	NONSUPPURATIVE OTITIS MEDIA NOS	2
82	3829	OTITIS MEDIA NOS	5
83	3831	CHRON MASTOIDITIS	2
84	3833	COMPL FOLLOWING MASTOIDECTOMY	1
85	3842	PERFORATION OF TYMPANIC MEMBRANE	3
86	3853	CHOLESTEATOMA OF MIDDLE EAR,MASTOID	1
87	3859	DSRDR MIDDLE EAR AND MASTOID NOS	1
88	3860	MENIERES DISEASE	1
89	3885	DISORDERS,ACOUSTIC NERVE	1
90	3890	CONDUCTIVE DEAFNES	1
91	3891	SENSORINEURAL DEAFNESS	11

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AGE 6 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
92	3898	DEAFNESS NEC	1
93	3899	DEAFNESS NOS	2
94	3949	OTH•UNSPEC DISEASE OF MITRAL VALVE	1
95	3979	RHEUMATIC DIS•ENDO CARDIUM•VALVE NOS	1
96	4019	ESSENTIAL HYPER-TENSION NOS	14
97	4209	ACUTE PERICARDITIS NEC	1
98	4240	MITRAL VALVE DSRDR	7
99	4241	AORTIC VALVE DSRDR	1
100	4267	ANOMALOUS ATRIOVEN TRICULAR EXCITATN	1
101	4278	CARDIAC DYSRHYTH-MIAS NEC	1
102	4430	RAYNAUDS SYNDROME	1
103	4438	PERIPHERAL VASCU-LAR DISEASE NEC	1
104	4510	PHLEBITIS•THROMBO-PHLEBITIS• SUPER-FICIAL VESSELS LEG	3
105	4511	PHLEBITIS•THROMBO-PHLEBITIS• DEEP VESSELS OF LEG	1
106	4519	PHLEBITIS•THROMBO-PHLEBITIS NOS	1
107	4549	VARICOSE VEINS• LEG NOS	10
108	4550	INTERNAL HEMOR-RHOIDS NOS	1

PAGE 7 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
109	4552	INTERNAL HEMORRHOID OTH COMPLICATIONS	2
110	4553	EXTERNAL HEMORRHOIDS NOS	1
111	4555	EXTERNAL HEMORRHOID OTH COMPLICATIONS	1
112	4564	SCROTAL VARICES	4
113	4571	OTHER LYMPHEDEMA	2
114	4592	COMPRESSION, VEIN	1
115	4599	DISORDERS CIRCULATORY SYSTEM NOS	1
116	4619	ACUT SINUSITIS NOS	1
117	4620	ACUTE PHARYNGITIS	11
118	4630	ACUTE TONSILLITIS	3
119	4658	ACUTE UPPER RESPIR ATORY INFECTION, MULTIPLE SITE NEC	5
120	4659	ACUTE UPPER RESPIR ATORY INFECTN NOS	135
121	4660	ACUTE BRONCHITIS	6
122	4730	CHRONIC SINUSITIS, MAXILLARY	7
123	4738	CHR SINUSITIS NEC	2
124	4739	CHR SINUSITIS NOS	3
125	4770	POLLINIC RHINITIS	1
126	4779	ALLERGIC RHINITIS NOS	2
127	4781	OTHER DISEASE, NASAL CAVITY, SINUSES	1

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PAGE 6 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
128	4830	PNEUMONIA, OTHER SPECIFIED ORGANISM	3
129	4860	PNEUMONIA NOS	36
130	4871	FLU W OTH RESPIRATORY MANIFESTATION	1
131	4900	BRONCHITIS NOS	1
132	4930	ASTHMA, EXTRINSIC	1
133	4939	ASTHMA NOS	79
134	4960	CHRONIC AIRWAYS OBSTRUCTION NEC	1
135	5110	PLEURISY	1
136	5188	OTH DIS, LUNG NEC	1
137	5191	OTH DIS TRACHEA, BRONCHUS NEC	1
138	5307	GASTRO-ESOPHAGEAL LACERATION-HEMORRHAGE SYNDROME	1
139	5324	DUODENAL ULCER,CHRONIC W HEMORRHAGE	4
140	5329	DUODENAL ULCER NOS	2
141	5334	PEPTIC ULCER,CHRONIC W HEMORRHAGE	1
142	5337	PEPTIC ULCER,CHRONIC NOS	1
143	5339	PEPTIC ULCER NOS	2
144	5355	GASTRITIS, GASTRODUODENITIS NOS	2
145	5400	ACUTE APPENDICITIS WITH GENERALIZED PERITONITIS	1

FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
146	5409	ACUTE APPENDICITIS NOS	5
147	5501	INGUINAL HERNIA WITH OBSTRUCTION	1
148	5509	INGUINL HERNIA NOS	19
149	5531	UMBILCL HERNIA NOS	1
150	5559	REGIONAL ENTERITIS NOS	2
151	5560	IDIOPATHIC PROCTO-COLITIS	2
152	5580	OTHER NONINFECTIVE GASTROENTERITIS AND COLITIS	5
153	5641	IRRITABLE COLON	1
154	5647	MEGACOLON NOS	2
155	5649	FUNCTIONAL DIGES-TIVE DSRDRS NOS	1
156	5650	ANAL FISSURE	1
157	5651	ANAL FISTULA	1
158	5660	ANAL,RECTAL ABSCSS	1
159	5694	OTH DSRDR RECTUM, ANUS	1
160	5733	HEPATITIS NOS	2
161	5771	CHRON PANCREATITIS	1
162	5870	RENAL SCLROSIS NOS	2
163	5908	PYELONEPHRITIS, PYONEPHROSIS NOS	1
164	5920	CALCULUS OF KIDNEY	2
165	5921	CALCULUS OF URETER	2

PAGE 10 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
166	5929	URINARY CALCULUS NOS	2
167	5939	DISORDERS OF KIDNEY AND URETER NOS	2
168	5969	DSRDRS BLADDER NOS	1
169	5989	URETHRAL STRICTURE NOS	2
170	5990	URINARY TRACT INFECTION, SITE NOS	1
171	6039	HYDROCELE NOS	2
172	6049	ORCHITIS AND EPIDIDYMITIS NOS	3
173	6081	SPERMATOCELE	1
174	6088	DISORDERS OF MALE GENITALIA NEC	1
175	6089	DISORDERS OF MALE GENITALIA NOS	2
176	6110	INFLAMMATORY DISEASE OF BREAST	1
177	6141	CHRONIC SALPINGITIS AND OOPHORITIS	4
178	6142	SALPINGITIS AND OOPHORITIS NOS	1
179	6149	INFLAMMATORY DISEASE, FEMALE PELVIC ORGANS NOS	1
180	6161	VAGINITIS AND VULVOVAGINITIS	1
181	6201	CORPUS LUTEUM CYST OR HEMATOMA	1
182	6202	OVARIAN CYST NEC	9

PAGE 11 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
183	6258	SYMPTOMS, PAIN, FEMALE GENITALIA NEC	1
184	6259	SYMPTOMS, PAIN, FEMALE GENITALIA NOS	1
185	6262	EXCESSIVE OR FREQUENT MENSTRUATION	3
186	6264	IRREGULAR MENSTRUAL CYCLE	1
187	6268	ABNORMAL BLEEDG, FEMALE GENITALIA NEC	1
188	6810	CELLULITIS AND ABSCESS, FINGER	1
189	6811	CELLULITIS AND ABSCESS, TOE	1
190	6820	CELLULITIS AND ABSCESS, FACE	1
191	6823	CELLULITIS, ABSCESS UPPER ARM, FOREARM	1
192	6826	CELLULITIS AND ABSCESS, LEG EXC FOOT	6
193	6827	CELLULITIS AND ABSCESS, FOOT EXC TOES	3
194	6850	PILONIDAL CYST WITH ABSCESS	1
195	6851	PILONIDAL CYST NOS	4
196	6861	PYOGENIC GRANULOMA	1
197	6918	ATOPIC DERMATITIS AND RELATED CONDITIONS NEC	7
198	6928	CONTACT DERMATITIS SPECIFIED AGNT NEC	1
199	6929	CONTACT DERMATITIS NOS	3

RELEASED BY:
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Health Services Command
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PREPARED BY:
Department of the Army
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HSHI-QBS 17 MAY 1984

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SE 12 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
200	6950	TOXIC ERYTHEMA	2
201	6961	OTHER PSORIASIS	5
202	6983	LICHENIFICATION,LICHEN SIMPLEX CHRON	1
203	7046	DISEASE OF HAIR, HAIR FOLLICLES NEC	1
204	7058	DISORDER OF SWEAT GLANDS NEC	5
205	7061	OTHER ACNE NEC	5
206	7081	IDIOPATHIC URTICARIA	1
207	7092	SKIN FIBROSIS,SCAR	27
208	7100	SYSTEMIC LUPUS ERYTHEMATOSUS	1
209	7140	RHUMTOID ARTHRITIS	1
210	7151	LOCALIZED PRIMARY OSTEOARTHROSIS,	2
211	7152	LOCAL SECONDARY OSTEOARTHROSIS	1
212	7153	LOCALIZED OSTEO-ARTHROSIS NOS	5
213	7159	OSTEOARTHROSIS NOS	6
214	7161	TRAUMATIC ARTHROP-ATHY	18
215	7169	ARTHROPATHY NOS	1
216	7171	DERANGEMENT ANTER-IOR HORN OF MEDIAL MENISCUS	1
217	7173	OTHER DERANGEMENT OF MEDIAL MENISCUS	3

PAGE 13 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
218	7174	DERANGEMENT OF LATERAL MENISCUS	3
219	7176	LOOSE BODY IN KNEE	1
220	7177	CHONDROMALACIA PATELLAE	24
221	7178	INTERNAL DERANGEMENT OF KNEE NEC	6
222	7179	INTERNAL DERANGEMENT OF KNEE NOS	6
223	7182	PATHOLOGICAL DISLOCATION OF JOINT	3
224	7183	RECURRENT DISLOCATION OF JOINT	25
225	7184	CONTRACTURE, JOINT	2
226	7185	ANKYLOSIS OF JOINT	20
227	7188	DERANGEMENT OF JOINTS NEC	20
228	7189	DERANGEMENT OF JOINTS NOS	8
229	7190	EFFUSION OF JOINT	2
230	7194	PAIN IN JOINT	10
231	7195	STIFF JOINT NEC	2
232	7196	OTHER SYMPTOMS REFERABLE TO JOINT	1
233	7198	DSRDR OF JOINT NEC	2
234	7221	DISPLACEMENT THORACIC OR LUMBAR INTERVERTEBRAL DISC	2
235	7222	DISPLACEMENT INTERVERTEBRAL DISC NOS	3

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Department of the Army
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	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
236	7224	DEGENERATION OF CERVICAL INTERVERTEBRAL DISC	1
237	7234	BRACHIAL NEURITIS, RADICULITIS NOS	1
238	7238	NECK SYNDROMES NEC	1
239	7242	LUMBAGO	10
240	7244	THORACIC, LUMBOSACRAL NEUPITIS NOS	2
241	7245	BACKACHE NOS	10
242	7248	OTH BACK SYMPTOMS	3
243	7249	BACK DSRDRS NOS	2
244	7261	ROTATOR CUFF SYNDROME OF SHOULDER	1
245	7262	AFFECTIONS OF SHOULDER NEC	1
246	7265	ENTHESOPATHY, HIP	2
247	7266	ENTHESOPATHY, KNEE	4
248	7267	ENTHESOPATHY, ANKLE TARUS	9
249	7269	ENTHESOPATHY NOS	1
250	7270	SYNOVITIS AND TENOSYNOVITIS	2
251	7271	BUNION	2
252	7274	GANGLION, CYST SYNOVIUM, TENDON, BURSA	3
253	7281	MUSCULAR CALCIFICATION, OSSIFICATON	1
254	7282	MUSCULAR WASTING, DISUSE ATROPHY NEC	2

AGE 15 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
255	7284	LAXITY OF LIGAMENT	4
256	7287	OTHER FIBROMATOSES	5
257	7288	DSRDR MUSCLE, LIGAMENT, FASCIA NEC	3
258	7289	DSRDR MUSCLE, LIGAMENT, FASCIA NOS	1
259	7291	MYALGIA, MYOSITIS NOS	2
260	7295	PAIN IN LIMB	19
261	7296	RESIDUAL FOREIGN BODY, SOFT TISSUE	2
262	7298	OTH LIME SYMPTOMS	1
263	7309	BONE INFECTION NOS	1
264	7320	JUVENILE OSTEOCHONDROSIS OF SPINE	4
265	7321	JUVENILE OSTEOCHONDROSIS,HIP,PELVIS	3
266	7324	JUVENIL OSTEOCHONDROSIS,LEG EXC FOOT	8
267	7327	OSTEOCHONDRITIS DISSECANS	7
268	7330	OSTEOPOROSIS	2
269	7331	PATHOLOGICAL FX	58
270	7332	CYST OF BONE	1
271	7338	MALUNION AND NON-UNION OF FRACTURE	29
272	7339	DISORDERS OF BONE AND CARTILAGE NEC	14
273	7340	FLAT FOOT	117

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PAGE 16 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
274	7350	HALLUX VALGUS	5
275	7354	OTH HAMMER TOE	6
276	7358	ACQUIRED DEFORMITY OF TOE NEC	4
277	7360	ACQUIRED DEFORMITY OF FOREARM	2
278	7362	OTHER ACQUIRED DEFORMITY OF FINGER	1
279	7363	ACQUIRED DEFORMITY OF HIP	1
280	7367	OTHER ACQUIRED DEFORMITY FOOT,ANKLE	102
281	7368	ACQUIRED DEFORMITY OF LIMB NEC	0
282	7372	LORDOSIS	1
283	7373	KYPHOSCOLIOSIS AND SCOLIOSIS	0
284	7381	OTHER ACQUIRED DEFORMITY OF HEAD	1
285	7385	OTHER ACQUIRED DEFORMITY BACK,SPINE	2
286	7386	ACQUIRED DEFORMITY OF PELVIS	1
287	7388	ACQUIRED DEFORMITY NEC	1
288	7454	VENTRICULAR SEPTAL DEFECT	2
289	7476	OTHER CONGENITAL ANOMALY OF PERIPHERAL VASCULAR SYS	1
290	7509	CONGENITAL ANOMALY OF UPPER ALIMENTARY TRACT NOS	1

TABLE 17 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY ET MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
291	7525	UNDESCENDED TESTICLE	1
292	7528	CONGENITAL ANOMALY GENITAL ORGANS NEC	1
293	7530	RENAL AGENESIS AND DYSGENESIS	1
294	7531	CYSTIC KIDNEY DIS	2
295	7533	CONGENITAL ANOMALY OF KIDNEY NEC	1
296	7540	CONGENITAL ANOMALY SKULL, FACE, JAW	1
297	7542	CONGENITAL ANOMALY OF SPINE	2
298	7544	CONGENITAL GENU RECURVATUM	1
299	7546	VALGUS DEFORMITY OF FEET	21
300	7547	CONGENITAL DEFORMITY OF FEET NEC	11
301	7548	CERTAIN OTHER MUSCULOSKELETAL CONGENITAL DEFORMITIES	3
302	7550	POLYDACTYLY	1
303	7551	SYNDACTYLY	1
304	7553	REDUCTION DEFORMITY, LEG	1
305	7555	CONGENITAL ANOMALY OF ARM AND SHOULDER NEC	3
306	7556	CONGENITAL ANOMALY OF LEG AND PELVIC GIRDLE	7
307	7561	CONGENITAL ANOMALY OF SPINE	22

RELEASED BY:
Department of the Army
Health Services Command
Patient Administration Division

PREPARED BY:
Department of the Army
US Army Patient Administration Systems and Biostatistics Activity
[illegible] 17 MAY 1989

CN: RUF-270

AGE 18 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
308	7564	CONGENITAL CHONDRODYSTROPHIES	1
309	7568	CONGENITAL ANOMALY MUSCLE, TENDON, FASCIA NEC	2
310	7571	ICHTHYOSIS CONGENITA	1
311	7573	CONGENITAL ANOMALY OF SKIN NEC	1
312	7802	SYNCOPE, COLLAPSE	10
313	7803	CONVULSIONS	9
314	7804	DIZZINES,GIDDINESS	1
315	7810	ABNORMAL INVOLUNTARY MOVEMENT	4
316	7820	DISTURBANCES OF SKIN SENSATION	1
317	7823	EDEMA	6
318	7840	HEADACHE	6
319	7847	EPISTAXIS	4
320	7881	DYSURIA	1
321	7883	INCONTINENT, URINE	4
322	7890	ABDOMINAL PAIN	3
323	7913	MYOGLOBINURIA	1
324	7940	ABNORMAL FUNCTION, BRAIN, CNS	1
325	8002	FX VAULT SKULL OP	1
326	8023	FX MANDIBLE OPEN	1
327	8024	FX MALAR,MAXILLARY BONES CLOSED	1

 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
328	8031	OTH.NOS SKULL FX W INTRACRANAL INJ CL	1
329	8050	FX CERVICAL VERTEBRA CLOSED	1
330	8052	FX DORSAL VERTEBRA CLOSED	2
331	8080	FX ACETABULUM CL	1
332	8130	FX RADIUS, ULNA UPPER END NOS, CL	2
333	8133	FX RADIUS, ULNA SHAFT OPEN	1
334	8134	FX RADIUS, ULNA LOWER END CLOSED	3
335	8140	FX CARPAL CLOSED	1
336	8230	FX TIBIA, FIBULA UPR END OR NOS CL	3
337	8242	FX ANKLE LATERAL MALLEOLUS CLOSED	1
338	8248	FX ANKLE NOS CL	2
339	8252	FX OTH TARSAL,META TARSAL BONES CL	1
340	8260	FX PHALANGES,FOOT CLOSED	2
341	8360	TEAR MEDIAL MENIS-CUS KNEE CURRENT	1
342	8363	DISLOCATION OF PATELLA, SIMPLE	1
343	8421	SPRAIN,STRAIN HAND	1
344	8441	SPRAIN,STRAIN, ME-DIAL LIGAMENT,KNEE	1
345	8442	SPRAIN,STRAIN CRU-CIATE LIGAMNT KNEE	2

RELEASED BY:
Department of the Army
Health Services Command
Patient Administration Division

PREPARED BY:
Department of the Army
Army Patient Administration Systems
& Biostatistics Activity
MAY 1984

REPORT B (CONTINUED)

PCN: RUF-270

PAGE 20 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
346	8450	SPRAIN,STRAIN ANKL	5
347	8451	SPRAIN,STRAIN FOOT	1
348	8460	SPRAIN, STRAIN LUMBOSACRAL	2
349	8472	SPRAIN, STRAIN OF BACK, LUMBAR	1
350	8479	SPRAIN, STRAIN OF BACK NOS	1
351	8489	ILL-DEFINED SPRAIN STRAIN NOS	1
352	8500	CONCUSSION	1
353	8540	INTRACRANIAL INJURY NOS	2
354	8734	OPEN WOUND FACE	1
355	8740	OPEN WOUND LARYNX, TRACHEA	1
356	8748	OPEN WOUND NECK NEC AND NOS	1
357	8760	OPEN WOUND BACK	1
358	8810	OPEN WOUND ELBOW, FOREARM, WRIST	1
359	8822	OPEN WOUND HAND WITH TENDON INJURY	1
360	8910	OPEN WOUND LOWER LEG	1
361	9140	ABRASION HAND	1
362	9149	SUPERFICIAL INJURY INSECTER, HAND NEC, NOS	1
363	9162	BLISTER LOWER LIMB EXCL FOOT	1

REPORT B (CONTINUED)

CN: RUF-270

PAGE 21 FREQUENCY OF PRIMARY DIAGNOSES FOR RECORDS FROM THE IPDS DATA BASE WITH SOCIAL SECURITY NUMBERS MATCHING THOSE PROVIDED BY FT MONROE

	PRIMARY DG CODE	TITLE (ICD-9)	FREQUENCY
364	9163	BLISTER, INFECTED, LWR LIMB EXCL FOOT	1
365	9168	SUPERFICIAL INJURY LWR LIMB EXCL FOOT NEC, NOS	1
366	9173	BLISTER, INFECTED, FOOT AND TOES	6
367	9240	CONTUSON HIP,THIGH	1
368	9245	CONTUSION LOWER LIMB NOS	1
369	9534	INJURY BRACHIAL PLEXUS	1
370	9588	EARLY COMPLICATION TRAUMA NEC	1
371	9597	INJ LOWER LIMB NOS	2
372	9638	POISONING BY SYSTEMIC AGENTS NEC	1
373	9651	POISONING BY SALICYLATES	1
374	9756	POISONING BY ANTI-COMMON-COLD DRUGS	1
375	9895	TOXIC EFFECT,VENOM	1
376	9914	IMMERSION FOOT	1
377	V150	HX,ALLERGY TO NON-MEDICINAL AGENTS	2
378	V718	OBSERVATN,SPECIFIC SUSPECTED COND NEC	2
		TOTAL	1549

RELEASED BY:
Department of the Army
Health Services Command
Patient Administration Division

PREPARED BY:
Department of the Army
US Army Patient Administration Systems
and Biostatistics Activity
HSHI-QBS 17 MAY 1984

APPENDIX C

STUDY OF WEIGHT STANDARDS FOR ENLISTMENT AND RETENTION IN THE ARMY

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PERSONNEL
WASHINGTON, DC 20310

REPLY TO ATTENTION OF

DAPE-MPA-CS

MEMORANDUM FOR RECORD

SUBJECT: Weight Standards for Enlistment and Retention in the Army

1. TRADOC requested that DA review the weight standards with the objective of reducing the difference between enlistment and retention standards.

2. TRADOC position is that enlistment standards should be moved toward retention standards. The main reasons are that:

a. The premise that a soldier will lose excess weight during BT/AIT and be able to maintain an acceptable retention weight level is not supportable.

b. Experience has shown that a soldier who enters the service at or close to the enlistment weight limit not only has difficulty in reducing to retention standards but also has difficulty in successfully completing the rigors of BT.

c. Soldiers who enter at or close to the enlistment weight limit have extreme difficulty in remaining at the retention level standard once it is achieved.

3. DA responded to TRADOC that:

a. Entrance standards are established by DOD while retention standards are set by each service. Any change must be staffed at DOD level and supported by empirical evidence to support problems with the standards.

b. A recent GAO study showed that about 20 percent of applicants for enlistment are rejected for weight and recommended that the weight standards be relaxed.

c. USAREC is doing a market analysis to determine the impact of using retention standards rather than entrance standards for recruiting.

d. A working group under the Accession Division Chief, HQDA would be convened to put together a proposal to take to the other services and OSD to adjust entrance standards.

DAPE-MPA-OS
SUBJECT: Weight Standards for Enlistment and Retention in the Army

4. The working group met at HQDA on 10 Nov 82 and again on 17 Jan 83:

a. Attendees are listed at inclosure 1.

b. Areas discussed on 17 Jan 83 were as follows:

(1) The USAREC market analysis has been completed and indicates that a change from current enlistment standards to the age-adjusted retention standards (new AR 600-9) would have rejected 18% of male and 45% of female FY 82 HSDG enlistees. The highest rate was in the category I-IIIA range. Male NHSG would have lost 15%. Prior Service fail rate for FY 82 enlistees would have been 13% of the male enlistees and 40% of the females. Summary of USAREC evaluation is at inclosure 2.

(2) TRADOC reported that they are collecting data on all new enlistees who entered training since the christmas holidays. Data being collected are in three areas:

Attrition from Training	CAT ONE	Retention weight	CAT TWO	Exceed retention weight by up to 10 pds	CAT THREE	Exceed retention weight by over 10 pds

- % in each CAT (Fail a training performance measure and are attrited)
  - o EDP
  - o Medical
  - o Recycle
- Avg change in weight for each CAT
- Copy of TRADOC message to training centers is at incl 3.

(3) OTSG representative stated that they need more detailed information to support any change in entrance standards. They need a by name and SSN listing for a 50,000 sample as follows on a nine track 800 BPI. Industry standard tape):

Name & SSN	SEX	AGE	HEIGHT	WEIGHT	PASS FAIL	REASON* FOR FAILURE

* EDP Medical (if possible by condition) Fail PT test Basic Rifle Marksmanship attitude end of course problems other causes. Recycles should also be indicated with reasons.

DAPE-MPA-OS
SUBJECT: Weight Standards for Enlistment and Retention in the Army

- Copy of OTSG requirement is at inclosure 4.

(4) OTSG also furnished comments on the history of the entrance weight standards (AR 40-501). The report is at inclosure 5.

- It indicates that any change in entrance standards must be staffed with the other Services and the Office of the Secretary of Defense. This is required because the draft law provides that the standards cannot be higher than they were in January 1945.

(5) In view of the new OTSG by name requirement, TRADOC may have to extend the collection of data an extra month (thru 30 Apr 83).

5. The meeting fully established the fact that four specific actions are needed as follows:

a. TRADOC - Collect data during training.

b. USAREC - Evaluate the impact on recruiting.

c. OTSG - Analyze impact on weight stds.

d. DCSPER - Make decision on changing retaining current entrance standards.

6. The working group will meet periodically, as required.

5 Incl
as

[redacted]
Colonel, GS
Chief, Accession Division

HQDA Weight Standards Meeting 17 Jan 83

Attendees

COL Bill Zaldo	DAPE-MPA	697-6744
COL George Stebbins	DASG-PSP	697-1815
Mr. Robert A. Byrne	DASG-PSP	693-2743
MAJ Carl H. Lane	TRADOC-IDT	680-3730
LTC Toby Runyon	DAPE-MPA-OS	695-0836
Mr. Lou Ruberton	DAPE-MPA-OS	695-0836

APPENDIX D

BASIC TRAINING CENTER COST DATA

FY 81 COST ANALYSIS

OF

[redacted]

(FY 83 DOLLARS)

1. Purpose.

a. To provide commanders of US Army Training Centers (ATC) detailed cost analyses and cost per graduate for each course conducted at the ATC and cost per receptee at the US Army Reception Station (Rec Sta).

b. To furnish the Comptroller of the Army costs associated with individual training for update of the Force Cost Information System (FCIS) and the Soldier Cost Information System (SCIS).

2. Data Source.

a. Direct Operation Maintenance, Army (OMA) and Military Personnel, Army (MPA) cost data, ammunition expenditures, trainee input-output data, attrition, number of receptees processed, average length of stay and other pertinent data relative to the various training/reception activities are furnished this headquarters by the respective training centers in accordance with instructions contained in TRADOC Regulation 11-5, 21 November 1977, Cost Analysis Program (MOS Training Costs), RCS ATRM-159(R1). Note: Unless otherwise noted, trainee will imply trainee/receptee.

b. Expense, workload, work force, population, and other data used in the development of indirect (base operations and other support) costs are furnished to this headquarters by the installations upon which training activities are located in accordance with TRADOC Reg 11-12, RCS ATRM-54(R1) and/or TRADOC Regulation 11-5. Base Operations expense data is extracted from the RCS CSCFA-218 report.

c. Variable and fixed costs are derived from manpower and cost estimating relationships (MER/CER) contained in the TRADOC Resource Factor Handbook.

3. Use of the Report. There are two major uses of this MOS Course Cost Report: (1) costing training alternatives, and (2) estimating future total resident training costs. Depending on which of the two is being undertaken, two alternative procedures exist for using the costs. The first is average variable cost and the second is total training costs.

a. The Variable Cost per Trainee.

(1) Changes (increases/decreases) in input/output. The fixed cost per trainee is relatively static over the short run (a fiscal year) given that an increase in load does not exceed the physical training plant or the decrease in load does not cause an activity closure. As a result, the variable cost per trainee should be applied to incremental/decremental changes in input/output to obtain an estimate of the change in resources.

(2) Changes in course length. The impact on costs of changing course length can be roughly estimated using the variable cost per trainee. First, compute the variable cost per trainee per week by dividing the variable cost per trainee by the weeks shown on the top of each course cost sheet. Then multiply the cost per week by the new course length to get the new variable cost per trainee. For example, if the variable cost per trainee is $5,000, the present course length is 5 weeks and the proposed course length is 6 weeks, then the estimated variable cost per trainee would be: ($5,000 ÷ 5 weeks) x 6 weeks = $6,000 variable cost per trainee. This method does not take into account other factors which may impact on training costs. These include such things as changes in ammo consumption, training method, cadre structure, etc. Taking such factors into account cannot be comprehensively described herein.

(3) The variable cost per trainee can be found at item 13B for Direct Mission and item 14B for Total Direct and Indirect. The corresponding items for the Rec Sta are 10B and 11B.

b. Total Training Cost per Trainee.

(1) This cost is only valid at the same trainee level that is shown on the report upon which the fixed cost is computed. Any other trainee level would imply a different total cost per trainee than printed on the report. Therefore, the first step in calculating a new total cost per trainee for each course would require multiplication of the present fixed cost by the number of trainees for the fiscal year of the report. Next, multiply the average variable cost by the new total number of trainees. This is the new total variable cost. The sum of the fixed and variable cost produces the new total cost for each course. Finally, divide the new total cost by the new total number of trainees to give you the recalculated cost per trainee. The total cost per trainee, for example, is useful in resource reviews for determining the total resources devoted to training.

(2) The total fixed cost per trainee can be found at item 13A and 14A. The corresponding items for the Rec Sta are 10A and 11A.

4. Methodology. This section deals with the methodology used in developing this computerized report. The explanations are keyed to the various parts of the report such as: Headings, Direct Costs, Indirect Costs, Total Cost per Trainee, and Fixed and Variable Costs.

a. Headings. The following headings are self-explanatory.

(1) Report Title.

(2) Report Control Symbol.

(3) Course Title.

(4) Course Number/MOS.

b. The following headings are defined.

(1) Course length: Measured in weeks (1 day equals 0.2 weeks).

(2) Trainees: The number of trainees who satisfactorily completed the course (graduated), minus one-half of the trainees in training at the beginning of the fiscal year, plus one-half of the trainees in training at the end of the fiscal year. This computation must be made before determining the cost.

c. DIRECT COSTS. Items 1-6 (ATC) and items 1-4 (Rec Sta) in machine report are explained below.

(1) Item 1 - DIRECT MISSION (ATC and Rec Sta). ATC costs are subdivided into costs identified with AIT, BT, and OSUT. The ATC overhead is also allocated to AIT, BT, and OSUT. It requires the following computations.

(a) Total training man-weeks per course are computed by multiplying the trainees plus one-half of the attrition times the course length in weeks. The BT, AIT, and OSUT training man-weeks are maintained separately.

(b) Total training man-weeks per graduate are computed by dividing the total training man-weeks by the trainees per course.

(c) Mission costs are distributed on a cost per training man-week basis as described below.

1. BT identified costs are divided by BT training man-weeks.

2. AIT identified costs are divided by the aggregate AIT training man-weeks.

3. OSUT identified costs are divided by the aggregate OSUT/TST training man-weeks.

4. ATC overhead costs are divided by the aggregate ATC training man-weeks. This cost is added to paragraph 1, 2, or 3 above to obtain the total cost per training man-week.

5. Rec Sta identified costs are allocated to receptees only.

(d) Mission costs per trainee by course are computed by multiplying mission cost per training man-week by man-weeks per trainee for each course. These are the costs displayed under item 1.

(e) Compute OMA and MPA costs separately.

(2) Item 2 - TROOP SUPPORT - P2/3 (ATC only). OMA, MPA, and equipment depreciation costs are distributed to courses which P2/3 units support. Before distributing the cost to the courses, compute amortized PA costs over a 10-year period and convert total military man-years of unit to man-days. Costs are distributed on the basis of man-days of support for each course divided by the total unit man-days. This results in only that cost associated with a specific number of days of support being passed to the course.

(3) Item 3 - AMMUNITION (ATC only). Ammunition costs are displayed under PA and are computed by dividing the total cost of ammunition (actually used) per course by trainees per course, which equals ammunition cost per trainee.

(1) Item 8 - BASE OPERATIONS (ATC) and Item 5 - BASE OPERATIONS (Rec Sta). Cost per trainee or receptee is computed in the following sequence.

(a) The ATC or Rec Sta dollar share in each account is computed by multiplying the percentages obtained in paragraph d above by the total civilian pay, supplies and equipment, other OMA and MPA costs in the appropriate Base Operations accounts.

(b) The cost per man-week for each base operations account is computed by dividing the ATC or Rec Sta share of each account by the total ATC or Rec Sta training man-weeks.

(c) The base operations cost per trainee or receptee by account is computed by multiplying the cost per man-week by the man-weeks per trainee or receptee.

(d) MPA and OMA costs for accounts .B0000 through .T0000 are totaled to determine the base operations cost per trainee and receptee. (Items 8 - BASE OP (ATC) and Item 5 - BASE OP (Rec Sta).)

(2) Item 9 - SUPPORT COSTS (ATC) and Item 6 - SUPPORT Cost (Rec Sta). Installation support mission is shown separately. Using the appropriate percentages derived in paragraph d above, repeat the same procedure used to compute base operations cost to determine installation support mission cost per trainee and receptee for each account.

(a) Item 9A - TRAINING AIDS (ATC) and Item 6A - TRAINING AIDS (Rec Sta) - 815790.1-.7. These costs are distributed on the basis of the population of trainees, receptees, students, and TOE units man-years supported by the installation.

(b) Item 9B - OTHER (ATC) and Item 6B - OTHER (Rec Sta).

1. 3957XX (Communications), 728010 (Second Destination Transportation): These costs are distributed on the basis of nontransient military man-years less retirees and dependents.

2. 840000 (Medical): Distributed on the same basis as Base Operations accounts except that retirees are included in the total population.

3. 1900 (Family Housing): These costs are distributed on the basis of nontransient military man-years supported (i.e., exclude student, trainee, receptee man-years from total). However, because of the reimbursable nature of FHMA, the reimbursements earned by the base operations for elements of expense 2573 (Civilian Labor Costs Paid from FHMA to Financing Appropriation or Fund) and 2574 (All Other Funded Costs Paid by FHMA to Financing Appropriation or Fund) have been deducted from item 8 (item 5 for Rec Sta) and costed in item 9B (item 6B for Rec Sta) to prevent double counting).

(3) Item 10 - TOTAL INDIRECT COST (ATC) and Item 7 - TOTAL INDIRECT COST (Rec Sta). Sum of items 8-9 (ATC) Sum of items 5-6 (Rec Sta).

(4) Item 4 - EQUIP ITEM DEPR (ATC) and Item 2 - EQUIP ITEM DEPR (Rec Sta). These costs are depreciation costs of major items of PA equipment. They are computed as follows:

(a) The acquisition costs of equipment dedicated to a single course are amortized over a 10-year period and are applied to that single course. A cost per trainee is obtained by dividing by the trainees of that course.

(b) Other than dedicated equipment acquisition costs are also amortized over a 10-year period. These costs are divided by the total training man-weeks (TMW) to obtain a cost per TMW. A cost per trainee is obtained by multiplying this result by the TMW per trainee/receptee.

(c) The sum of the results of items (a) and (b) above is a cost per trainee/receptee.

(5) Item 5 - TRAINEE PAY AND ALWS (ATC) and Item 3 - RECEPTEE PAY AND ALWS (Rec Sta). (Modal Grade.) Cost per trainee is obtained by multiplying the course length in weeks by the weekly rate for the modal grade of the trainees/receptees. The weekly rate is based upon the Composite Standard Rates for Costing Military Personnel Services (chapter 17, AR 37-108). These costs are displayed under MPA columns for item 5 (ATC) and item 3 (Rec Sta).

(6) Item 6 - TRAVEL PAY TO COURSE (ATC only). Travel cost per trainee is computed by multiplying the average one-way mileage by 13¢ cents. This is charged to MPA. Average one-way mileage is obtained from a sample of trainee records.

NOTE: Travel from the course is picked up in costing of unit or next phase of training.

(7) Item 7 - TOTAL DIRECT COSTS (ATC) and Item 4 - TOTAL DIRECT COSTS (Rec Sta). Sum of items 1-7 (ATC) and sum of items 1-3 (Rec Sta).

d. INDIRECT COSTS. Items 8-10 (ATC) and items 5-7 (Rec Sta) are explained below. These costs consist of a pro rata share of base operations, training aids, medical, communications, and family housing administration. The following methods are used to compute the indirect costs per trainee/receptee. ATC or Rec Sta percentage share of Base Operations (.B0000, .D0000, .E0000. .F0000, .G0000, .H0000, .N0000, .P0000, .Q0000, .S0000 and T0000) and Other Support (for definition of Other Support, see para d(2)(b), page 5) is computed by dividing the ATC or Rec Sta military man-years by the total post military man-years. ATC or Rec Sta military man-years include trainees/receptees, etc., minus those assigned to base operations accounts and retirees. Base Operations personnel and services are provided for tenants, ATC, Rec Sta,and Troop Support units. If these activities were not located on base, there would be no need for garrison personnel. Therefore, base operations costs are distributed to all activities on the installation except to the garrison itself. ATC or Rec Sta percentage share of .C0000 (maintenance of materiel) is estimated by the installation. ATC or Rec Sta percentage share of .J0000, .K0000, .L0000, and .M0000 is computed by dividing active square footage of buildings and facilities assigned to the ATC or Rec Sta by the total square footage assigned to all supported tenants.

(4) Item 11 - TOTAL DIRECT AND INDIRECT (ATC) and Item 8 - TOTAL DIRECT AND INDIRECT (Rec Sta). Sum of items 7 and 10 (ATC). Sum of items 4 and 7 (Rec Sta).

(5) Item 12 - TOTAL COST PER TRAINEE (ATC) and Item 9 - TOTAL COST FOR RECEPTEE (Rec Sta). This is computed by adding the total direct and indirect for each appropriation.

e. FIXED AND VARIABLE COSTS. The methodology for determining the fixed and variable relationship for mission and base operations is as follows:

(1) An analysis of the ATC Staffing Guide was used to compute the fixed and variable percentage of the direct mission MPA costs. A CER/MER weighting was used to develop the fixed and variable percentage of the direct mission OMA costs. The Rec Sta used the MEP for the MPA computation while the OMA computation was based on the CER/MER weighted factors.

(2) The following procedure is used to compute the fixed and variable percentages for base operations at the ATC. Military man-years supported is the independent variable.

(a) A manpower estimating relationship (MER) equation ($Y = a + bx$) was used to compute the personnel fixed and variable percentages. The statistical fixed value (the "a" value in a linear equation) was divided by the calculated "Y" value to arrive at the fixed personnel percentage. The variable percentage was determined by subtracting the fixed value from 100%.

(b) A cost estimating relationship (CER) was used to compute the nonpersonnel fixed and variable percentages. The same procedures described in (a) above were followed to arrive at the percent break of fixed and variable.

(c) An overall fixed-variable OMA percentage was developed using a weighted average approach. First, the OMA cost was divided into two portions, personnel and nonpersonnel cost. The percentage of personnel and nonpersonnel was determined by dividing each portion by the total actual cost. The MER (personnel) and the CER (nonpersonnel) fixed-variable percentages were then weighted by the percent mix of personnel and nonpersonnel to arrive at an overall weighted OMA fixed-variable percentage.

(3) The same procedures described in e(2)(a), e(2)(b), and e(2)(c) above were followed for both mission and base operations at the Reception Station. The number of receptees processed is the independent variable.

(4) The same fixed-variable relationship as computed for base operations is applied to report item 9 - Support Costs (ATC) and item 6 - Support Costs (Rec Sta).

(5) The fixed-variable relationship for OMA and MPA are computed separately.

(6) See tables 1 and 2 for breakout of the fixed/variable methodology by items and appropriation for both ATC and Rec Sta. Their use in calculating items 13 and 14 (ATC) and items 10 and 11 (Rec Sta) of the machine report are explained below.

(a) Item 13 - DIRECT MISSION (ATC) and Item 10 - DIRECT MISSION (Rec Sta).

1. Item 13A - FIXED (ATC) and Item 10A - FIXED (Rec Sta). The direct mission fixed costs for ATC and Reception Station are computed by multiplying the direct mission cost from report item 1 times the fixed percentage developed at subparagraph 4e(1) above.

2. Item 13B - VARIABLE (ATC) and Item 10B - VARIABLE (Rec Sta). The direct mission variable cost is the difference between the direct mission total and the direct mission fixed cost described at paragraph 1 above.

(b) Item 14 - TOTAL DIRECT AND INDIRECT (ATC) and Item 11 - TOTAL DIRECT AND INDIRECT (Rec Sta).

1. Item 14A - FIXED (ATC) and Item 11A - FIXED (Rec Sta). This is the cumulative fixed cost of the following items:

a. Direct Mission Fixed Cost for ATC and Reception Station. See paragraph 4e(6)(a)1 above.

b. Troop Support - P2/3 (ATC) at report item 2 is considered to be 100 percent fixed.

c. Equipment Item Depreciation at report item 4 (ATC), item 2 (Rec Sta), is considered to be 100 percent fixed.

d. Fixed Other Support Costs are computed similarly to paragraph 4e(6)(a)1 above, except FEMA is 100% fixed.

2. Item 14B - VARIABLE (ATC) and Item 11B - VARIABLE (Rec Sta). The cumulative direct and indirect variable cost is the difference between the total direct and indirect cost and the fixed direct and indirect cost described at paragraph 4e(6)(b)1 above. This assumes that the following costs are 100 percent variable.

a. Ammunition (report item 2) (ATC only).

b. Trainee Pay and Allowances (ATC) (report item 5) and Receptee Pay and Allowance (report item 3) (Rec Sta).

c. Travel Pay to Course (report item 6) (ATC only).

5. DATA ADJUSTMENTS.

a. Adjustments are made to insure that only costs that directly contribute to trainee instruction or receptee processing have been allocated to courses.

b. All dollars used in this analysis have been inflated to FY 83 $ level.

6. ATC/REC STA REPORT. Attached is a sheet for each course reporting the cost per trainee/receptee during FY 81. Costs are categorized as fixed, variable, direct, and indirect by OMA, MPA, PA, and FEMA appropriations.

7. Point of Contact. Assistance in utilizing the data attached is available by contacting Mrs. Jane Coppock at HQ TRADOC, AUTOVON 680-4451.

TABLE 1

FY 81 COST PER TRAINEE (FY 83 $) RCS ATRM 159(R1)

COURSE TITLE: (WEEKS)
COURSE NUMBER/MOS: (TRAINEES)

DIRECT COSTS	OMA	MPA	PA	PHMA
1. DIRECT MISSION	Msn CER/MER Wt	Fixed/Variable 1/		
2. TROOP SUPPORT P2/3	100% Fixed	100% Fixed	100% Fixed	
3. AMMUNITION			100% Variable	
4. EQUIP ITEM DEPR			100% Fixed	
5. TRAINEE PAY & ALWS (MODAL GRADE)		100% Variable		
6. TRAVEL PAY TO COURSE		100% Variable		
7. TOTAL DIRECT COSTS				
INDIRECT COSTS				
8. BASE OPERATIONS				
9. SUPPORT COSTS				
A. TRAINING AIDS				
B. OTHER	_____	_____	_____	100% Fixed
10. TOTAL INDIRECT COSTS	Base Opns CER/ MER Weighted	Base Ops MER		
11. TOTAL DIRECT & INDIRECT				
12. TOTAL COST PER TRAINEE $_____				
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED				
B. VARIABLE				
14. TOTAL DIRECT & INDIRECT				
A. FIXED				
B. VARIABLE				

1/ Percentages were obtained by analyzing the staffing guide and applying regression for various organizations to the MPA.

511

15

FY 1981 COST PER TRAINEE (FY 83 $)

RCS ATRM-159(R1)

COURSE TITLE BASIC TRAINING

(7.0 WEEKS)
(3,338.0 NORM-GRAD)

COURSE NUMBER/MOS 750-BT

DIRECT COSTS	OMA	MPA	PA	FHMA
1. DIRECT MISSIONS	90	254		
2. TROOP SUPPORT - P2/3				
3. AMMUNITION			230	
4. EQUIP ITEM DEPR			47	
5. TRAINEE PAY & ALWS (E-1)		1,630		
6. TRAVEL PAY TO COURSE		190		
7. TOTAL DIRECT COSTS	90	2,074	277	
INDIRECT COSTS				
8. BASE OPERATIONS	710	211		
9. SUPPORT COSTS				
A. TRAINING AIDS	36	3		
B. OTHER	94	98		13
10. TOTAL INDIRECT COSTS	840	312		13
11. TOTAL DIRECT & INDIRECT	930	2,388	277	13
12. TOTAL COST PER TRAINEE $	3,606			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	44	77		
B. VARIABLE	46	177		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	330	205	47	13
B. VARIABLE	600	2,181	230	

MCCLELLAN

115

FY 1981 COST PER TRAINEE (FY 83 $)

RCS ATRM-159(R1)

COURSE TITLE BASIC TRAINING (7.0 WEEKS)
(7,981.0 NORM-GRAD)

COURSE NUMBER/MOS 750-BT

DIRECT COSTS	OMA	MPA	PA	FHMA
1. DIRECT MISSIONS	41	621		
2. TROOP SUPPORT - P2/3				
3. AMMUNITION			201	
4. EQUIP ITEM DEPR			8	
5. TRAINEE PAY & ALWS (E-1)		1,630		
6. TRAVEL PAY TO COURSE		176		
7. TOTAL DIRECT COSTS	41	2,427	209	
INDIRECT COSTS				
8. BASE OPERATIONS	940	290		
9. SUPPORT COSTS				
A. TRAINING AIDS	42	5		
B. OTHER	104	79		22
10. TOTAL INDIRECT COSTS	1,086	374		22
11. TOTAL DIRECT & INDIRECT	1,127	2,801	209	22
12. TOTAL COST PER TRAINEE $	4,159			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	5	161		
B. VARIABLE	36	460		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	483	367	8	22
B. VARIABLE	644	2,434	201	

03

KS

RCS ATRM-159(R1)

KNOX

FY 1981 COST PER TRAINEE (FY 83 $)

COURSE TITLE BASIC TRAINING (7 WEEKS)

(7.0 WEEKS)
(4,360.0 NORM-GRAD)

COURSE NUMBER/MOS 750-B1

DIRECT COSTS		UMA	MPA	PA	PMMA
1.	DIRECT MISSIONS	121	1,177		
2.	TROOP SUPPORT - P2/3				
3.	AMMUNITION			101	
4.	EQUIP ITEM DEPR			22	
5.	TRAINEE PAY & ALWS (E-1)		1,650		
6.	TRAVEL PAY TO COURSE		48		
7.	TOTAL DIRECT COSTS	121	2,855	123	
INDIRECT COSTS					
8.	BASE OPERATIONS	1,049	321		
9.	SUPPORT COSTS				
	A. TRAINING AIDS	36	6		
	B. OTHER	118	90		57
10.	TOTAL INDIRECT COSTS	1,203	417		57
11.	TOTAL DIRECT & INDIRECT	1,324	3,272	123	57
12.	TOTAL COST PER TRAINEE $	4,776			
FIXED & VARIABLE COSTS					
13.	DIRECT MISSION		400		
	A. FIXED	39	777		
	B. VARIABLE	82			
14.	TOTAL DIRECT & INDIRECT				
	A. FIXED	725	663	22	57
	B. VARIABLE	599	2,609	101	

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JACKSON

FY 1983 COST PER TRAINEE (FY 83 $)

RCS ATRM-159(R1)

COURSE TITLE BASIC TRAINING (05B00) (4.0 WEEKS)
(40,527.6 NORM-GRAD)

COURSE NUMBER/MOS 750-BT

DIRECT COSTS	OMA	MPA	PA	FHMA
1. DIRECT MISSIONS	69	676		
2. TROOP SUPPORT - P273	9	85	28	
3. AMMUNITION			117	
4. TROOP ITEM DEPR			17	
5. TRAINEE PAY & ALWS (E-1)		1,630		
6. TRAVEL PAY TO COURSE		48		
7. TOTAL DIRECT COSTS	98	2,419	162	
INDIRECT COSTS				
8. BASE OPERATIONS	747	305		
9. SUPPORT COSTS				
A. TRAINING AIDS	15	1		
B. OTHER	114	99		26
10. TOTAL INDIRECT COSTS	876	405		26
11. TOTAL DIRECT & INDIRECT	974	2,824	162	26
12. TOTAL COST PER TRAINEE	$ 3,986			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	8	196		
B. VARIABLE	81	480		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	482	525	45	26
B. VARIABLE	492	2,299	117	

DIX

G5

FY 1981 COST PER TRAINEE (FY 85 $)

RCS ATRM-159(R1)

COURSE TITLE BASIC TRAINING (BT)

(7.0 WEEKS)
(21,974.0 NORM-GRAD)

COURSE NUMBER/MOS 750-BT

DIRECT COSTS	OMA	MPA	PA	FHMA
1. DIRECT MISSIONS	74	613		
2. TROOP SUPPORT - P273				
3. AMMUNITION			112	
4. EQUIP ITEM DEPR			13	
5. TRAINEE PAY & ALWS (E-1)		1,636		
6. TRAVEL PAY TO COURSE				
7. TOTAL DIRECT COSTS	74	2,243	125	
INDIRECT COSTS				
8. BASE OPERATIONS	1,353	444		
9. SUPPORT COSTS				
A. TRAINING AIDS	41	2		
B. OTHER	73	55		131
10. TOTAL INDIRECT COSTS	1,467	501		131
11. TOTAL DIRECT & INDIRECT	1,541	2,744	125	131
12. TOTAL COST PER TRAINEE	$ 4,541			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	38	166		
B. VARIABLE	36	447		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	992	587	13	131
B. VARIABLE	549	2,157	112	

BLISS

D5

RCS ATRM-159(R1)

FY 1981 COST PER TRAINEE (FY 83 $)

COURSE TITLE BASIC TRAINING-OSUT (7.0 WEEKS) (830.0 NORM-GRAD)

COURSE NUMBER/MOS 750-BT

DIRECT COSTS	OMA	MPA	PA	FHMA
1. DIRECT MISSIONS	105	1,568		
2. TROOP SUPPORT - P2/3				
3. AMMUNITION			53	
4. EQUIP ITEM DEPR			957	
5. TRAINEE PAY & ALWS (E-1)		1,630		
6. TRAVEL PAY TO COURSE		301		
7. TOTAL DIRECT COSTS	105	3,499	1,010	
INDIRECT COSTS				
8. BASE OPERATIONS	1,052	226		
9. SUPPORT COSTS				
A. TRAINING AIDS	32	2		
B. OTHER	246	209		34
10. TOTAL INDIRECT COSTS	1,330	437		34
11. TOTAL DIRECT & INDIRECT	1,435	3,936	1,010	34
12. TOTAL COST PER TRAINEE $	6,415			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	45	487		
B. VARIABLE	60	1,081		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	684	728	957	34
B. VARIABLE	751	3,208	53	

84

L.WOOD

35

RCS ATRM-159(R1)

FY 1981 COST PER TRAINEE (FY 83 $)

COURSE TITLE BASIC TRAINING

(8.0 WEEKS))
(14,248.0 NORM-GRAD)

COURSE NUMBER/MOS 750-8T

DIRECT COSTS	OMA	MPA	PA	FIMA
1. DIRECT MISSIONS	84	834		
2. TROOP SUPPORT - P2/3	1	14	1	
3. AMMUNITION			112	
4. EQUIP ITEM DEPR			23	
5. TRAINEE PAY & ALWS (E-1)		1,863		
6. TRAVEL PAY TO COURSE		216		
7. TOTAL DIRECT COSTS	85	2,927	138	
INDIRECT COSTS				
8. BASE OPERATIONS	794	198		
9. SUPPORT COSTS				
A. TRAINING AIDS	15	5		
B. OTHER	138	125		73
10. TOTAL INDIRECT COSTS	947	328		73
11. TOTAL DIRECT & INDIRECT	1,032	3,255	138	73
12. TOTAL COST PER TRAINEE $	4,498			
FIXED & VARIABLE COSTS				
13. DIRECT MISSION				
A. FIXED	41	251		
B. VARIABLE	43	583		
14. TOTAL DIRECT & INDIRECT				
A. FIXED	554	525	26	73
B. VARIABLE	478	2,730	112	

APPENDIX E

DEVELOPMENT OF A WEIGHTED COST PER ORTHOPEDIC BED DAY

APPENDIX E

Development of a Weighted Cost per Orthopedic Bed Day *

MTF	Cost Per Ortho Bed Day **	# SF Casualties	Weighted Value
Fort Sill	$286	1	286
Fort McClellan	$288	0	0
Fort Knox	$310	28	8680
Fort Jackson	$192	4	768
Fort Dix	$223	2	446
Fort Bliss	$196	1	196
Fort Leonard Wood	$178	25	4450
Fort Benning	$171	1	171
	TOTAL:	62	14997

Weight Cost per Bed Day (14997 ÷ 62) = $242

* Based on cumulative figures 4th quarter FY 83

** Rounded to nearest $1.00