AD-A263 581

(2)

REPORT NO T6 - 93

IMPACT OF SOCK SYSTEMS ON FREQUENCY AND SEVERITY OF BLISTER INJURY IN A MARINE RECRUIT POPULATION

U S ARMY RESEARCH INSTITUTE
OF
ENVIRONMENTAL MEDICINE
Natick, Massachusetts

UNITED STATES ARMY
MEDICAL RESEARCH & DEVELOPMENT COMMAND

DISCLAIMER

The views, opinions, and/or findings contained in this report are those of the authors and should not be construed as official Department of the Army or Department of the Navy position, policy, or decision, unless so designated by other official documentation.

Human subjects participated in this study after giving their free and informed voluntary consent. Investigators adhered to AR 70-25 and USAMRDC Regulation on Use of Volunteers in Research.

Citations of commercial organizations and trade names in this report do not constitute an official Department of the Army or Department of the Navy endorsement or approval of the products or services of these organizations.

Approved for public release; distribution is unlimited.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	MAR 93	FINAL

4. TITLE AND SUBTITLE
IMPACT OF SOCK SYSTEMS ON FREQUENCY AND SEVERITY OF BLISTER INJURY IN A MARINE RECRUIT POPULATION

5. FUNDING NUMBERS

6. AUTHOR(S)
KENNETH J. THOMPSON, Maj, USMC, MURRAY P. HAMLET, D.V.M., BRUCE H. JONES, LTC, M.D., M.P.H., AND JOSEPH J. KNAPIK, MAJ, Sc.D.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
US MARINE CORPS LIAISON OFFICE, US ARMY NATICK RESEARCH, DEVELOPMENT AND ENGINEERING CENTER, NATICK, MA 01760-5004

US ARMY RESEARCH INSTITUTE OF ENVIRONMENTAL MEDICINE, NATICK, MA 01760-5007

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*
Historically, blisters have plagued the feet of infantry forces and reduced the combat effectiveness of military units. The purpose of this study was to test the ability of a prototype sock system to reduce blister incidence in Marine recruits at Marine Corps Recruit Depot, Parris Island, SC, from May to August, 1992. Subjects were separated into three groups. The first group wore the standard issue sock consisting of a wool-cotton-nylon-spandex combination (group SS, N=160). The second group wore the standard sock with a thin inner sock consisting of polyester (group SL, N=106). The third group wore the same thin inner sock and a thick, dense, prototype outer sock consisting of a wool-polypropylene combination (group PL, N=91). Recruits in the PL group suffered significantly fewer blisters compared to recruits in either the SS group (40% vs 69%, $p<0.001$) or the SL group (40% vs 77%, $p<0.001$). The rate of blister occurrence was also less in the PL group (11 blisters/100 recruits/week) compared to the SS group (28 blisters/100 recruits/week) or the SL group (26 blisters/100 recruits/week). Blisters serious enough to require a sick call visit occurred with greater frequency in the SS group compared to both the PL group (24.4% vs 11.0%, $p=0.02$) and the SL group (24.4% vs 9.4%, $p<0.01$); there was no difference between the SL and PL groups. Blister reduction was most apparent in the early weeks of recruit training. The prototype sock system reduced the overall incidence and severity of blisters in Marine recruit training.

14. SUBJECT TERMS	15. NUMBER OF PAGES
BLISTERS, PREVENTIVE SOCK, INJURY PREVENTION	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	NONE

TECHNICAL REPORT
NO. 6-93

IMPACT OF SOCK SYSTEMS ON FREQUENCY AND SEVERITY OF BLISTER INJURY IN A MARINE RECRUIT POPULATION

Prepared by

K.J. Thompson, M.P. Hamlet, B.H. Jones,
and J.J. Knapik

March 1993

US Marine Corps Liaison Office, US Army Natick Research, Development and Engineering Center, Natick, MA 01760-5004

US Army Research Institute of Environmental Medicine
Natick, MA 01760-5007

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

We are greatly indebted to the Marine recruits who volunteered to participate in this study over and above the requirements of Marine recruit training.

We are also greatly indebted to the Drill Instructors of the 1992 Recruit Company E, Platoons 2071-2078. They, above all others involved in the test, "made it happen." Incorporating even the small amount of time needed for daily data collection into an already taxing training schedule required a substantial effort on their part.

We are grateful to Capt Richard C. Seaverns, Officer in Charge, Depot Clothing Branch, MCRD, Parris Island, for his extensive help in arranging and helping to trouble shoot the nut-and-bolts study matters regarding funding, personnel availability, delivery dates, and scheduling.

We are grateful to the Marines of the Initial Clothing Issue Section ("Hygienics"), Depot Clothing Branch, MCRD, Parris Island, for their cooperation in altering their schedule to accommodate the extended hours needed to issue additional boots and socks to the study groups: SSgt Christopher T. Paulus, Sgt Carmelo Sustache, LCpl Leroy Atwater Jr., LCpl DeAngelo A. Blount, and PFC Michael C. Arnold.

We wish also to thank LCDR Alene B. Lawman, Director of the Branch Medical Clinic, MCRD, Parris Island, for supporting the study by making her personnel available, providing access to medical records, and lending office space for the data compilation.

Finally, we wish to thank SPC Rex Hoyt and Dr. Philip Ang, who helped us compile the data and construct the charts, and Ms. Roberta Ciaramicoli, who assisted with formatting the manuscript.

EXECUTIVE SUMMARY

Historically, blisters have plagued the feet of infantry forces and reduced the combat effectiveness of military units. The purpose of this study was to test the ability of a prototype sock system to reduce blister incidence in Marine recruits at Marine Corps Recruit Depot, Parris Island, SC, from May to August, 1992. Subjects were separated into three groups. The first group wore the standard issue sock consisting of a wool-cotton-nylon-spandex combination (group SS, N=160). The second group wore the standard sock with a thin inner sock consisting of polyester (group SL, N=106). The third group wore the same thin inner sock and a thick, dense, prototype outer sock consisting of a wool-polypropylene combination (group PL, N=91). Recruits in the PL group suffered significantly fewer blisters compared to recruits in either the SS group (40% vs 69%, $p<0.001$) or the SL group (40% vs 77%, $p<0.001$). The rate of blister occurrence was also less in the PL group (11 blisters/100 recruits/week) compared to the SS group (28 blisters/100 recruits/week) or the SL group (26 blisters/100 recruits/week). Blisters serious enough to require a sick call visit occurred with greater frequency in the SS group compared to both the PL group (24.4% vs 11.0%, $p=0.02$) and the SL group (24.4% vs 9.4%, $p<0.01$); there was no difference between the SL and PL groups. Blister reduction was most apparent in the early weeks of recruit training. The prototype sock system reduced the overall incidence and severity of blisters in Marine recruit training.

INTRODUCTION

In most civilian activities, foot blisters are a painful but typically minor annoyance. They usually require only simple first aid and a short period of limited activity. In military units, however, blisters can reduce combat effectiveness, as treatment may use up valuable mission time, and a seriously afflicted individual may be unable to walk for a day or more. Blisters can progress to the point where an individual must march at a considerably reduced pace or be forced into painful immobility.

Foot blisters have historically been a military problem (British Medical Journal, 1895) and are still a common occurrence in modern military units. In a study of a strenuous 20 km road march conducted in the early spring in Alaska, blisters were experienced by 69% of all soldiers; 10% of the soldiers (32 of 335) had blisters severe enough to require medical attention (Knapik, et al., 1992). During a 100 mile, 5-day road march conducted in moderate temperature at Ft. Hunter Leggett, CA, 25% of soldiers who could not complete the march (94 of 363) were casualties due to blisters (Knapik, et al., 1990).

Blisters can also progress to more severe problems. In the Second World War, 2.4% of all hospitalizations for non-combat injuries were due to blisters (Reister, 1975). During a Marine recruit training cycle 14% of all sick call visits for foot problems (44 of 323) were due to blisters (Bensel, 1976). During a typical two-month period at the Marine Basic School Dispensary in Quantico, VA, 5% of all clinic visits (1457 of 31652 cases) were for blisters (Jagoda, et al., 1981). In one six-month period at the Navy Recruit Training Command in Great Lakes, IL, 17% of all dispensary admissions (151 of 864) were for cellulitis; 94% of the cellulitis cases (141 of 151) were on the foot, and 84% of the cases (137 of 151) were associated with blisters (Hoeffler, 1975).

Military boots have often received much of the blame for foot blisters (British Medical Journal, 1895; Allsopp, 1895; Stokes, 1965). Despite attempts to improve boot fit, style, and composition, there has been little corresponding reduction in blister incidence (Allan, 1964; Allan and Macmillan, 1963; Cooper, 1988; Stokes, 1965; Whittingham, 1951).

There also have been studies examining the efficacy of foot powder in the reduction of blister incidence. These investigations found foot powder did not reduce blister incidence in recruits (Quinn, 1967) and actually increased incidence in marching troops (Allan, 1964; Allan and Macmillan, 1963).

Modifications of the socks worn by the soldier have met with some limited success. Soldiers marching with two wool socks tended to have a lower incidence of foot blisters than soldiers marching with a single wool sock (Whittingham, 1951). During a 3-day exercise in the United Kingdom that included daily road marching, soldiers wearing a nylon sock under a wool sock experienced fewer blisters per man than soldiers wearing a single or double wool sock; however, when the exercise was repeated in the tropical heat of Singapore, the single wool sock was favored. During a 36-day operation that included a large amount of road marching, it was found that individuals wearing a wool sock over a nylon or terylene sock, had a lower blister incidence than soldiers wearing a single wool sock (Allan and Macmillan, 1963). More recently, it has been shown in runners that an acrylic sock resulted in fewer and smaller blisters than a cotton sock (Herring and Richie, 1990).

An understanding of the physiological and mechanical processes associated with blister formation may assist in developing more appropriate sock systems. Blisters probably are caused by frictional shearing forces that cause mechanical fatigue in the epidermal cells. This leads to an intra-epidermal split as a result of the loss of cell-to-cell connections (Comaish, 1973). The intra-epidermal split fills with fluid having a composition similar to serum (Naylor, 1955). While very dry or very wet skin may decrease blister formation by decreasing this frictional effect, moist skin appears to exacerbate blister formation by increasing friction and macerating the stratum corneum (Akers, 1977; Akers and Sulzberger, 1972; Naylor, 1955).

We hypothesized that a thin liner sock of polyester combined with a thick outer sock of wool could reduce blisters through several mechanisms. First, both the polyester sock (Farnworth, 1986) and the wool sock would force moisture away from the foot, thereby reducing the frictional effect. Second, the liner sock would serve as a "second skin" such that shear forces would act on the inner sock and not on the true epidermis.

Finally, additional shear protection could be provided by increasing the thickness of the outer sock, using a "nap" that would serve to absorb shear forces.

The purpose of this study was to test the ability of this prototype sock system to reduce blister incidence and severity in a group of Marine recruits undergoing boot camp training.

METHODS

Subjects

Subjects included 357 male Marine recruits undergoing their basic training at the U.S. Marine Corps Recruit Depot, Parris Island, SC. They were fully briefed on the purposes and risks of the study and gave their written, informed, voluntary consent to participate in the investigation in accordance with Army Regulation 70-25.

Study Design

Recruits were separated into three groups that differed only on the type of sock system they wore (Table 1). The first group consisted of three platoons of recruits (N=160) who wore the single, standard boot sock usually worn in recruit training. This group was designated group SS (standard sock). The second group consisted of two platoons of recruits (N=106) who wore the standard sock plus a liner sock consisting of a polyester material. The polyester liner was a thin sock worn directly over the skin. This group was designated group SL (standard with liner). The third group consisted of two platoons of recruits (N=91) who wore a prototype sock with the polyester liner and were designated group PL (prototype with liner). A summary of the three groups is shown in Table 2 and the socks are shown in Figure 1. Figure 2 provides a close-up of the prototype sock showing detail on the "nap" that was hypothesized to add shear protection.

All recruits were issued two new pair of combat boots. One boot was a standard black combat boot that was fully leather. The other boot was a jungle boot that was primarily leather across the bottom with the upper portion consisting of nylon. Recruits

were instructed to change or alternate wearing these boots every other day. The boots are shown in Figure 3.

The study commenced at Parris Island in May 1992 and continued through August 1992. The date and location for the test were specifically selected to address a concern that the thicker prototype sock might prove uncomfortable for wear in hot or humid climates. Average maximal heat and humidity for Parris Island during the study months are summarized in Table 3.

TABLE 1

COMPARISON OF THE CURRENT MILITARY BOOT SOCK WITH THE U.S. MARINE CORPS PROTOTYPE SOCK

Standard Sock	Prototype Sock
heel and sole: 50%-50% wool-cotton w/spandex sock upper: 50%-30%-20% wool-cotton-nylon	50%-50% wool-polypropylene
heel and sole: wool-cotton thread sock upper: wool-cotton thread interwoven into nylon mesh	wool-polypropylene blended into single thread
thread: one twist per inch	thread: seven twists per inch
heel and sole thicker than remainder of sock	sock uniformly thick
regular boot size is worn	may require half or whole boot size increase and/or an increase in width

TABLE 2

SUMMARY OF THE THREE EXPERIMENTAL GROUPS

Sock System	Subjects
Standard sock (SS)	160
Standard sock with liner (SL)	106
Prototype sock with liner (PL)	91

TABLE 3

AVERAGE MAXIMAL TEMPERATURE AND RELATIVE HUMIDITY (0700 MEAN) FOR MCRD PARRIS ISLAND, SOUTH CAROLINA, MAY-AUGUST, 1992*

	May	June	July	August
Average Maximum Daily Temperature (°F)	81.9	86.4	93.6	89.6
Average Maximal Relative Humidity (%)	77.0	83.4	83.5	88.1

* The prevailing weather conditions at Parris Island for the test period were considered adequate to ascertain recruit comfort level for wearing the sock in a hot and humid climate.

FIGURE 1. SOCKS WORN BY THE RECRUITS.
THE SOCK ON TOP IS THE PROTOTYPE SOCK; THE SOCK IN THE MIDDLE IS THE LINER;
THE SOCK ON THE BOTTOM IS THE STANDARD SOCK.

FIGURE 2. CLOSE-UP VIEW OF THE PROTOTYPE SOCK.

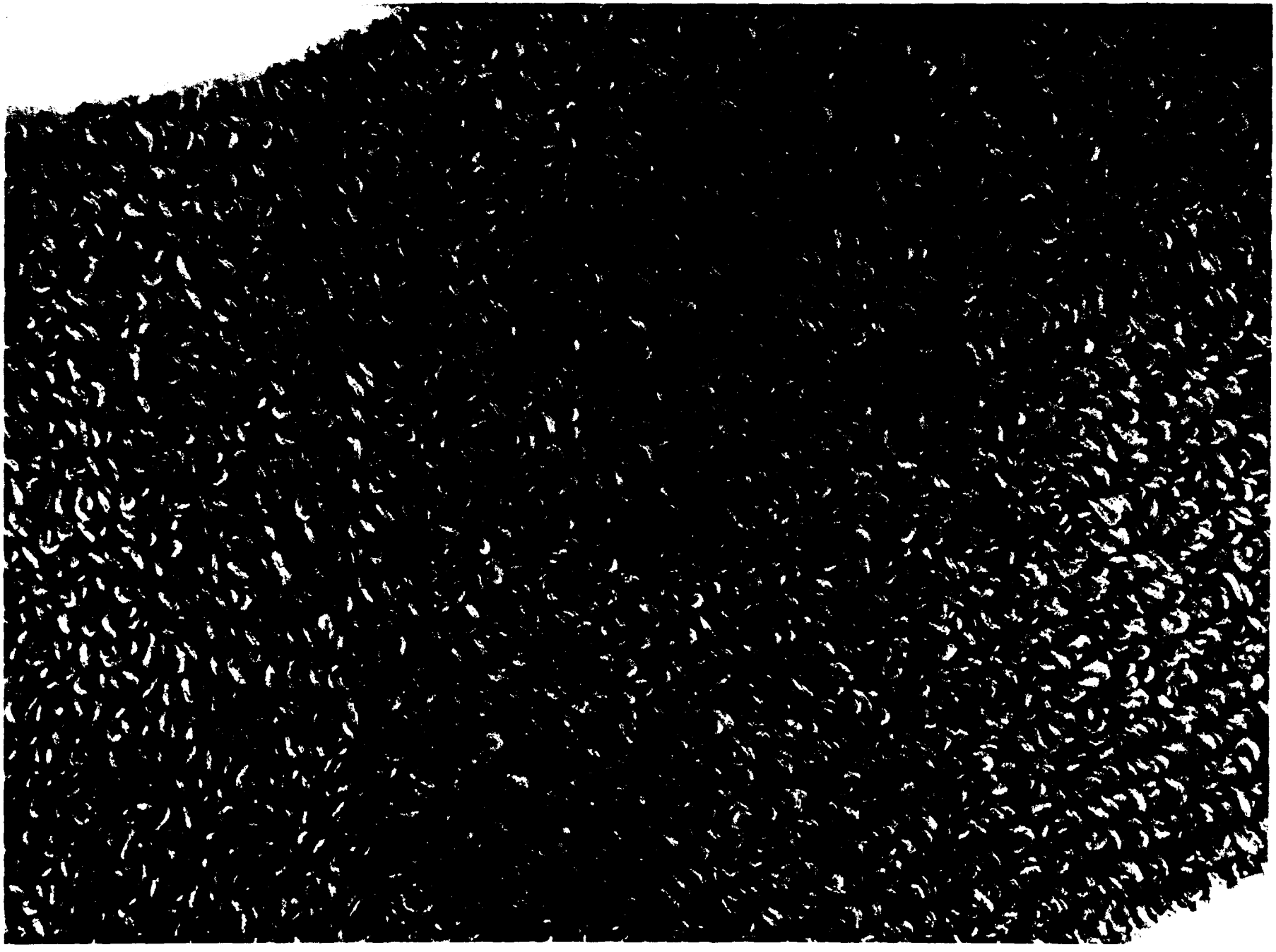


FIGURE 3. BOOTS WORN BY THE RECRUITS. THE LEATHER BOOT IS ON THE RIGHT; THE JUNGLE BOOT IS ON THE LEFT.

Marine Corps Recruit Training

Marine Corps basic training for male recruits is comprised of 61 training days over a 12-week period, during which the recruits participate in an increasingly demanding level of physical training. Training normally is conducted six days per week, and there are six additional non-training days of "mess and maintenance" (kitchen duty and facility and grounds maintenance). Recruit training includes three road marches conducted on days 14 (5 miles), 26 (8 miles), and 32 (10 miles). Training also includes the Combat Assault Course, Combat Conditioning Course (both are endurance courses), drill periods, and numerous "administrative movements" (unit nontactical movements). The standard training schedule is at Appendix C.

Procedures

After recruits were assigned to groups, they were in-processed and received their initial clothing issue. Recruits assigned to the SL and PL groups received additional socks (polyester liner and polyester liner plus prototype sock, respectively). Recruits in the PL group also were fitted for larger boots, which were necessary to accommodate the greater bulk of the prototype sock.

Once the actual training phase started, every effort was made to minimize changes to normal training. Consequently, the only deviation from the standard training regimen was in the maintaining of a Blister Data Sheet for each recruit. This sheet contained one week's worth of data entry space and was used to collect daily information on blister formation. Under the supervision of the Drill Instructors, this form was filled out by each platoon's designated "Blister Private" (a recruit trained in and charged with the treatment of minor blisters) during the standard daily hygiene inspection. The creation of "Blister Privates" is standard practice at MCRD, Parris Island; maintenance of the Blister Data Sheet merely became an additional task for the individuals so assigned. A sample Blister Data Sheet is contained in Appendix B.

For all serious injuries and illnesses, recruits went to sick call at the Medical Clinic. As per standard procedure, the diagnosis, treatment and disposition of these recruits was recorded on a standard DOD medical treatment form (Standard Form 600). When the

recruit returned from the clinic he brought back a separate form containing the diagnosis and disposition for his injury or illness. This information was recorded in sick call logs maintained by the Drill Instructors. It is standard procedure for the Drill Instructors to record one of three dispositions: "no duty," "limited duty" (with specified parameters) or "full duty." Information regarding foot blisters and cellulitis was compiled from the sick call logs. A sample log is at Appendix A.

At the conclusion of the study the medical treatment record of each recruit was screened for blisters and cellulitis. This was to ensure that all incidence recorded here were also recorded on the sick call logs. Information from the blister data sheets, sick call logs, and medical clinic records were compared to ensure that all relevant injury data were gathered and no data were double counted.

Data Analysis

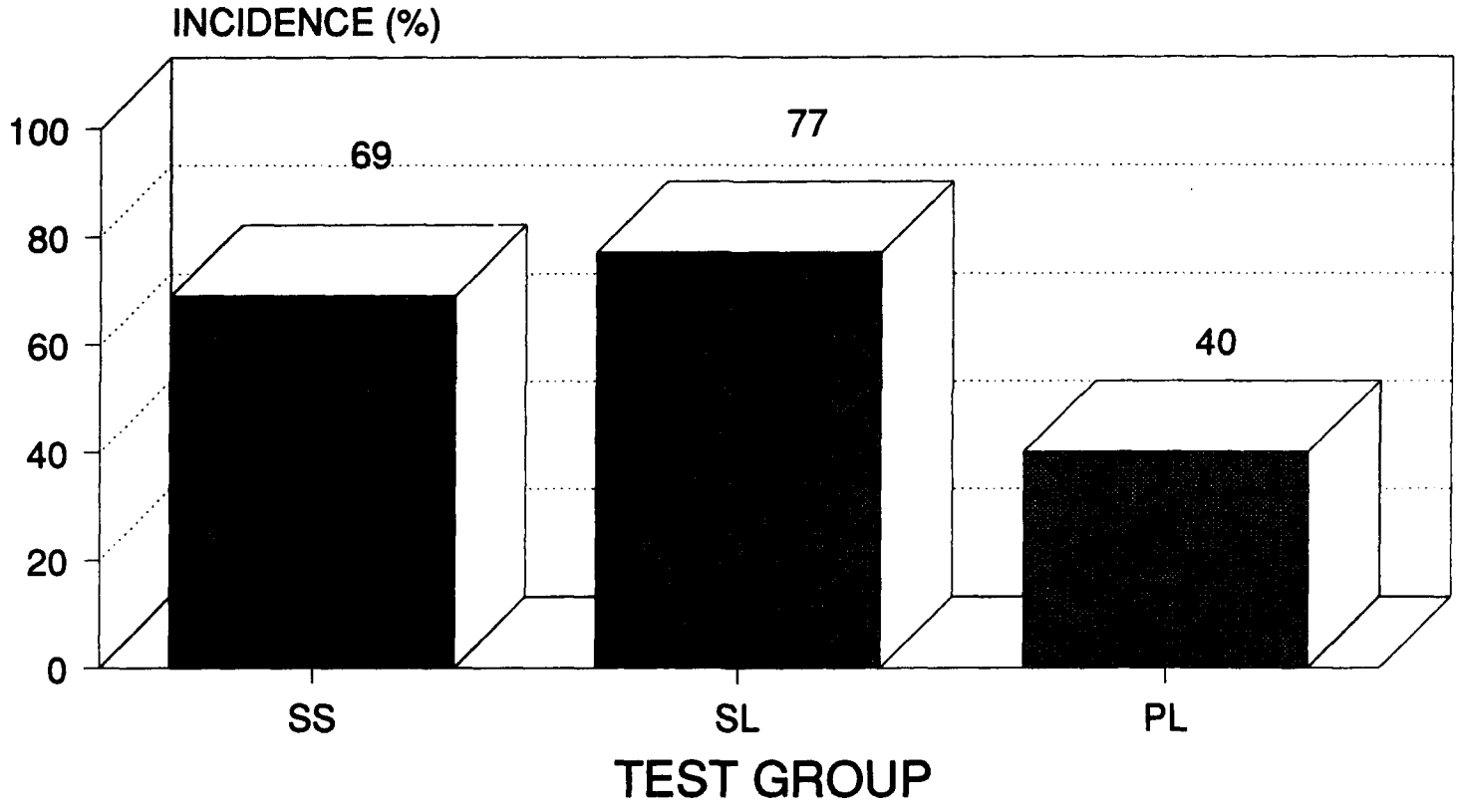
Incidence data (recruits injured/total recruits) was analyzed using a 2 X 3 chi-square analysis (injury/non-injured X group). Where overall differences were found, differences among specific groups were tested using a 2 X 2 chi-square analysis of the two specific groups of interest. Where sample frequencies were less than five, Yates correction was applied.

RESULTS

The overall incidence of blisters during the entire recruit training cycle is shown in Figure 4. There were significant differences among the three groups ($p<0.01$). Recruits in the PL group had a lower blister incidence than recruits in both the SS (risk ratio=1.8, $p<0.01$) and SL groups (risk ratio=2.0, $p<0.01$). There were no differences in blister incidence between recruits in the SS and SL groups ($p=0.15$). Table 4 shows the average number of recruits with blisters for each group and the average number of blisters per group.

Blister incidence plotted in three-week intervals during the recruit training cycle is shown in Figure 5. Blister incidence was lower for the first six weeks of training for the

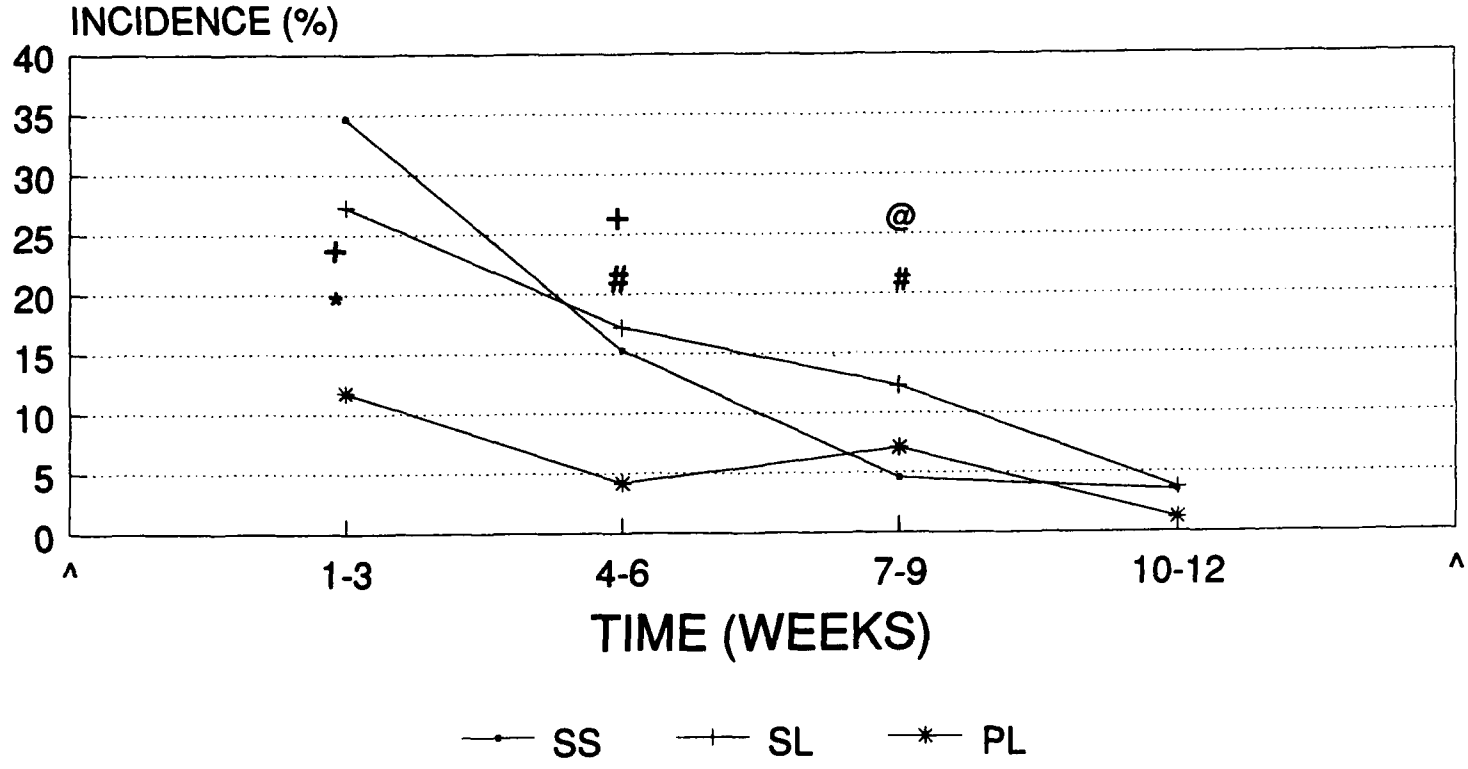
FIGURE 4
EFFECT OF SOCK SYSTEMS ON INCIDENCE OF BLISTERS



MCRD, PARRIS ISLAND
TEST DATE: SUMMER 1992
N(SS)=160, N(SL)=106, N(PL)=91

RR SS/PL=1.8, p<0.01
RR SL/PL=2.0, p<0.01

FIGURE 5
EFFECT OF SOCK SYSTEMS ON BLISTER INCIDENCE OVER WEEKS



MCRD, PARRIS ISLAND
TEST DATE: SUMMER 1992
N(SS)=160, N(SL)=106, N(PL)=91

+ = SS>PL ($p<0.05$)
* = SS>SL ($p<0.05$)
@ = SL>SS ($p<0.05$)
# = SL>PL ($p<0.05$)

TABLE 4

AVERAGES FOR NUMBER OF RECRUITS PER PLATOON AND NUMBER OF BLISTERS

GROUP	AVERAGE NUMBER OF RECRUITS PER PLATOON	AVERAGE NUMBER OF RECRUITS WITH BLISTERS PER PLATOON	AVERAGE NUMBER OF BLISTERS PER PLATOON
SS	53	37	163
SL	53	41	151
PL	46	18	54

TABLE 5

BLISTERS AND CELLULITIS RESULTING IN LIMITED DUTY TIME

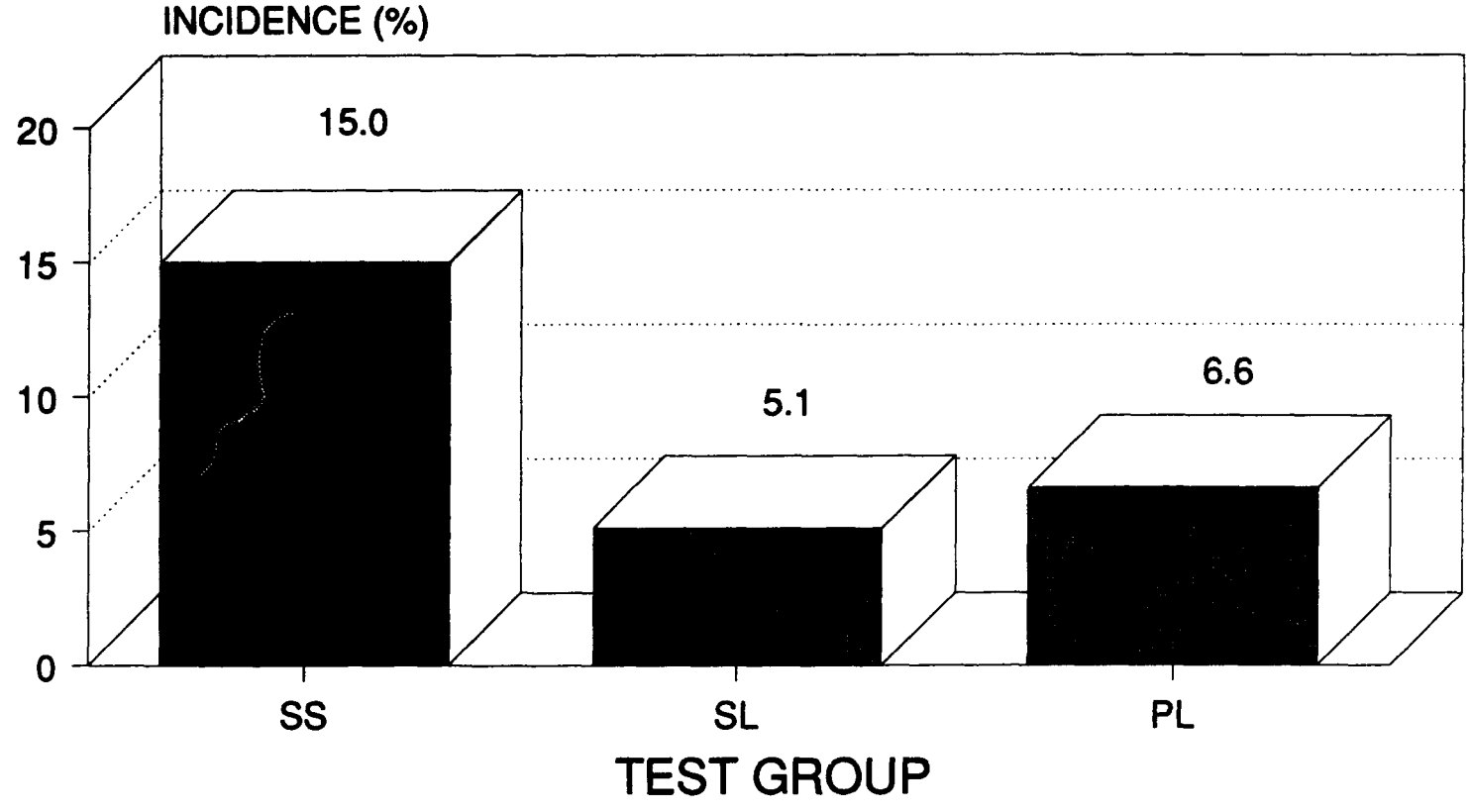
GROUP	NUMBER OF RECRUITS	NUMBER OF DAYS OF LIMITED DUTY
SS	24	42
SL	5	8
PL	6	16

PL group but later in training (as the blister incidence decreased overall) differences became less apparent. There were no significant differences in blister incidence among the sock systems in the last three weeks of training.

The overall incidence of sick call for blisters and cellulitis is shown in Figure 6. There were significant differences among the three groups ($p<0.01$). Recruits in the SS group had more sick call visits than recruits in the PL group (risk ratio=2.4, $p<0.01$) or the SL group (risk ratio=2.5, $p<0.01$). There were no differences between the PL and SL groups ($p=0.91$).

Figure 7 shows the incidence of blisters and cellulitis that resulted in limited duty time. There were significant differences among the three groups ($p=0.01$). Recruits in the SS group had a greater incidence of blisters and cellulitis resulting in limited duty than recruits in the PL group (risk ratio=2.3, $p=0.05$) or the SL group (risk ratio=2.9, $p=0.02$). There were no differences between the PL and SL groups ($p=0.59$). Table 5 shows limited duty time for blisters and cellulitis. The overall amount of limited duty time was 30.6, 7.5 and 18.7 days per 100 recruits for the SS, SL and PL groups, respectively.

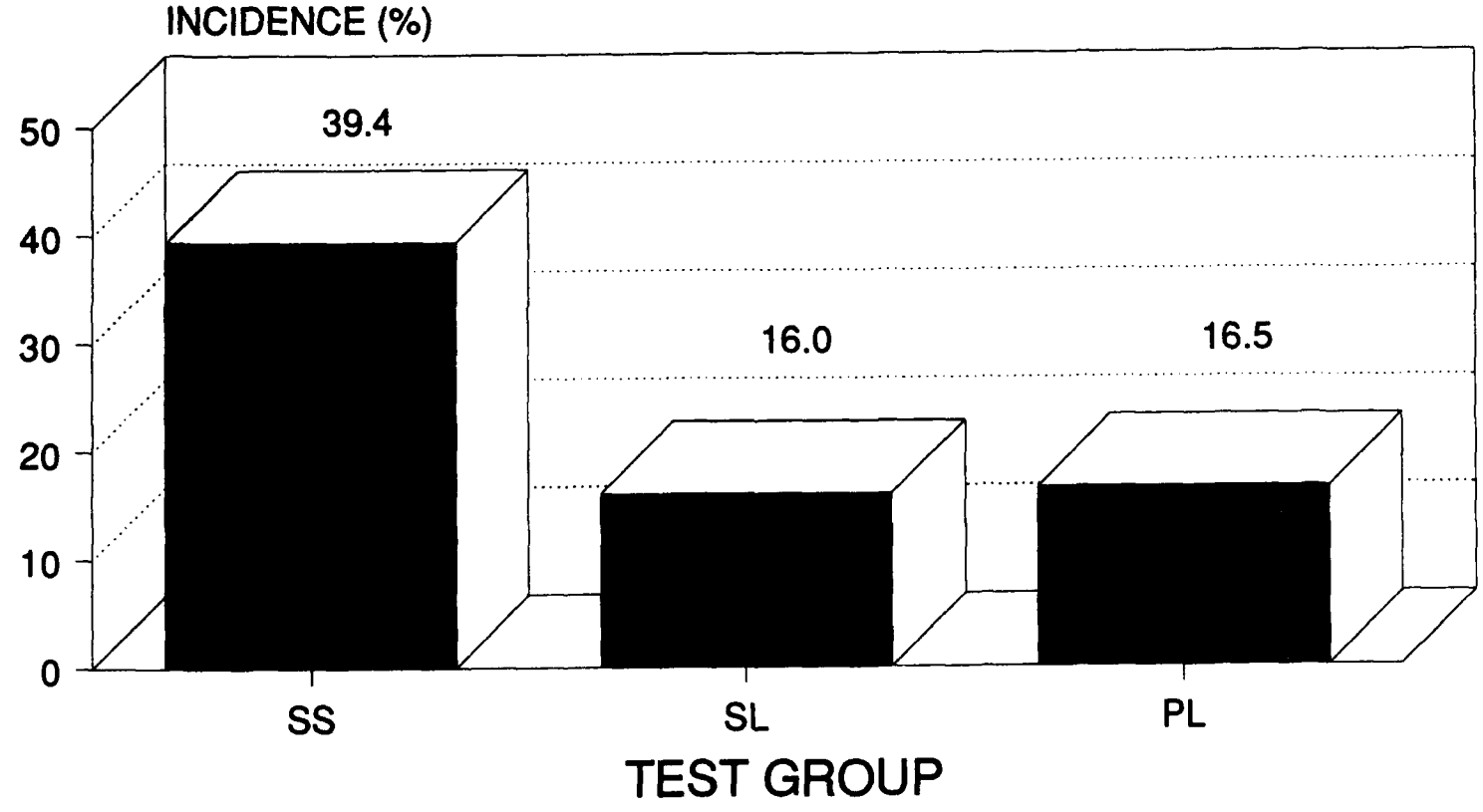
FIGURE 6
EFFECT OF SOCK SYSTEMS ON BLISTERS AND CELLULITIS RESULTING IN LIMITED DUTY



MCRD, PARRIS ISLAND
TEST DATE: SUMMER 1992
N(SS)=160, N(SL)=106, N(PL)=91

RR SS/PL=2.3, p=0.05
RR SS/SL=2.9, p=0.02

FIGURE 7
EFFECT OF SOCK SYSTEMS ON INCIDENCE OF SICK CALL FOR BLISTERS AND CELLULITIS



MCRD, PARRIS ISLAND
TEST DATE: SUMMER 1992
N(SS)=160, N(SL)=106, N(PL)=91

RR SS/PL=2.4, p<0.01
RR SS/SL=2.5, p<0.01
RR SL/PL=1.0, p=0.91

DISCUSSION

This study demonstrates that the prototype sock system results in fewer and less severe blisters than the standard sock typically worn by recruits during recruit training. There were overall reductions in the number of recruits who suffered blisters and in the number of sick call visits for blisters.

The advantages of the prototype sock system were most apparent early in recruit training when blister incidence was highest for all groups. There were few differences among the three groups in the later part of recruit training. It should be noted that physical training is reduced in these last few weeks as illustrated by an examination of the training schedule (Appendix C). With less physical training there were fewer opportunities for conditions which favor blister formation.

The early portion of recruit training is a critical time. Recruits are adapting to the rigors of physical training and acquiring their military skills. Recruits that suffer fewer blisters in this time may adapt and train more effectively. Further, military units may be called on to perform missions without having the benefit of extensive foot marches; their feet may not be adapted to this training and may be more prone to blisters. These units may especially benefit from the prototype sock system.

Although the prototype sock system seems to to have lessened the frequency of foot blisters, the indices of blister severity (sick call and limited duty incidence) did not differ between recruits wearing the prototype sock and the standard sock with a liner. Both of these sock systems contained a liner sock that presumably assisted with moving sweat away from the foot (Farnworth, 1986). It is possible that moisture may be a major factor relating to blister severity.

The number of limited duty days in the PL group was highly influenced by injuries to a single recruit who had seven days of limited duty prescribed for a single incident. This was the single highest amount of limited duty time given for any blister sick call visit. If that recruit was eliminated from the data, the number of limited duty days for blisters

and cellulitis would fall to 11.0 for the PL group compared to 30.6 and 7.5 days/100 recruits for subjects in the SS and SL groups, respectively.

One major advantage of this study was the daily examination by the Blister Private of the feet of the recruits. As this individual examined the feet for blisters every day, there was no under-reporting. This has been shown to be a problem in other studies examining foot blisters (Knapik, et al., 1992). It is recommended that subsequent studies retain this method of data collection.

CONCLUSIONS

The prototype sock with liner reduced the incidence of blisters in male recruits in Marine Corps Recruit Training. For those blisters that do occur, both the standard sock with a liner and the prototype sock with liner reduced the severity of blisters, as seen in the lower number of sick call visits and incidence of limited duty time. The prototype sock with liner was effective in preventing blisters in a hot, humid environment.

RECOMMENDATIONS

1. Conduct a study of the effectiveness of the prototype sock in an operational military unit.

2. Conduct a comparative study of the effectiveness of the prototype sock and the standard sock when worn with broken-in boots.

3. Conduct a study of the effectiveness of the prototype sock worn without a liner sock.

REFERENCES

Akers, W.A. Sulzberger on friction blistering. Int J Dermatol 16:369-372, 1977.

Akers, W.A. and M.B. Sulzberger. The friction blister. Milit Med 137:1-7, 1972.

Allan, J.R. A study of foot blisters. United Kingdom: Army Operational Research Establishment, Research Memorandum No. 1/64, 1964.

Allan, J.R. and A.L. Macmillan. The immediate effects of heat on unacclimatized paratroops. Exercise "Tiger Brew II". Army Operational Research Establishment, United Kingdom Research Memorandum 16/62, 1963.

Allsopp, W.H. The marching power of our soldiers. Br Med J 2:1391, 1895.

Bensel, C.K. The effect of tropical and leather combat boots on lower extremity disorders among Marine Corps recruits. Natick MA: U.S. Army Natick Research and Development Command, Technical Report No. 76-49-CEMEL, 1976.

Comaish, J.S. Epidermal fatigue as a cause of friction blisters. Lancet 1:81-84, 1973.

Cooper, D. Footwear and blister incidence. In: Handbook on Clothing, NATO Research Study Group 7., 1988.

Farnworth, B. A numerical model of the combined diffusion of heat and water vapor through clothing. Textile Res J 56:653-665, 1986.

Herring, K.M. and D.H. Richie. Friction blisters and sock fiber composition. J Am Podiatr Med Assoc 80:63-71, 1990.

Hoeffler, D.F. Friction blisters and cellulitis in a Navy recruit population. Milit Med 140:333-337, 1975.

Jagoda, A., H. Madden and C. Hinson. A friction blister prevention study in a population of Marines. Milit Med 146:42-44, 1981.

Knapik, J., M. Bahrke, J. Staab, K. Reynolds, J. Vogel and J. O'Connor. Frequency of loaded road march training and performance on a loaded road march. Natick MA: United States Army Research Institute of Environmental Medicine, Technical Report T13-90, 1990.

Knapik, J., K. Reynolds, J. Staab, J.A. Vogel and B. Jones. Injuries associated with strenuous road marching. Milit Med 157:64-67, 1992.

Naylor, P.F.D. Experimental friction blisters. Br J Dermatol 67:327-342, 1955.

Quinn, J. The effects of two new foot powders on the incidence of foot infection and blisters in recruits during basic training. Farnborough, United Kingdom: Army Personnel Research Establishment, Research Memorandum No. P/6, 1967.

Reister, F.A. Medical statistics in World War II. Washington D.C.: Department of the Army, Office of the Surgeon General, 1975.

Stokes, A.W. Military footwear and the occurrence of foot blisters. Melbourne Australia: Eighth Commonwealth Defence Conference on Clothing and General Stores, UK6, 1965.

The soldier's boot. The Br Med J 2:1307-1308, 1895.

Whittingham, D.G.V. A further investigation of some of the effects of marching in flying boots: Exercise Orthopod II. Farnborough, United Kingdom: R.A.F Institute of Aviation Medicine, Flying Personnel Research Committee Report No. FPRC 751, 1951.

APPENDIX A

PLT #: _____

SAMPLE SICK CALL LOG

DATE	NAME	TIME	ILLNESS	DISPOSITION
920705		0600	RASH	F/D
920710		0600	RA GASTRITIS	L/D X 48
920710		0630	R/A EPIDYDIMITIS, LEFT	L/D X 48
920712		0600	CHILL, COUGH	L/D X48
920712		0600	VOMITING	F/D
920713		0600	LUMP IN (R) ARMPIT	F/D
920714		0600	INFECTED STRAWBERRIES	L/D TIL 16 July 92
920715		1400	VOMITING	F/D
920715		1400	(L) SIDE PAIN	F/D
920715		0630	COLD	F/D
920715		0630	BOILS/PUS ON HANDS	L/D X 24 HRS
920715		0630	PAIN IN (L) HIP	L/D X48 HRS
920715		0630	CELLULITIS ON (L) FOOT —	F/D 2½ HRS S/C
920720		1230	COLD	F/D
920720		1330	ABRASIONS ON ELBOWS	F/D
920720		0830	HEAT RASH	F/D
920720		0830	SWOLLEN (R) HAND	L/D X 48
920720		0830	INFECTED BLISTERS —	F/D
920720		0830	HEAT RASH	F/D
920720		0830	HEAT RASH	F/D
920720		0830	VOMITING	F/D
920720		0830	VOMITING	F/D
920720		0830	FEVER	L/D X 72
920722		0630	VOMITING	F/D
920724		0630	RASH	F/D
920724		0630	FLU SYMPTOMS	F/L
920724		0630	HEAT RASH	F/D
920725		0630	R/A FEVER	L/D X 48 HRS
920725		0730	PAIN IN (L) KNEE	L/D X 24 HRS
920725		0700	PAIN IN (R) KNEE	L/D X 96 HRS
920725		0730	PNEUMONIA	N/D X 48 HRS
920725		0730	SHINSPLINTS	F/D
920725		0730	PAIN IN (R) ANKLE	F/D
920725		0730	(L) HIP PAIN	N/D X 48 HRS
920725		0700	RASH	F/D
920727		1300	HEAT RASH	F/D
920727		1300	HEAT RASH	F/D
920727			VOMITING	F/D
920727		1300	HEAT RASH	F/D
920727		0600	R/A	N/D X 24 HRS
920727		0600	R/A	F/D
920727		1300	HEAT RASH	F/D
920727		1300	HEAT RASH	F/D
920727		1300	HEAT RASH	F/D
920727		1300	HEAT RASH	F/D
920728		1230	CELLULITIS ON (R) FOOT —	F/D TSX24
920728			SHINSPLINTS	L/D X 48 TSX24
920728				
920728		0600	INGROWN TOENAIL	L/D X48 TSX96
920728		1230	CELLULITIS (R) FOOT —	F/D, TSX24
920729		0600	R/A	L/D X24 TSX24

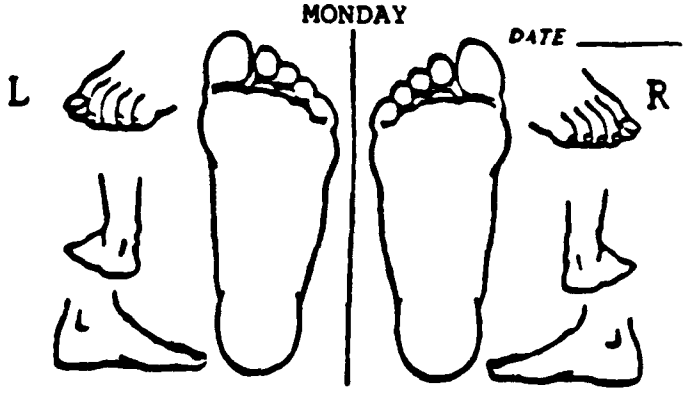
BLISTER DATA SHEET

LAST 4 DIGITS OF SSN _____

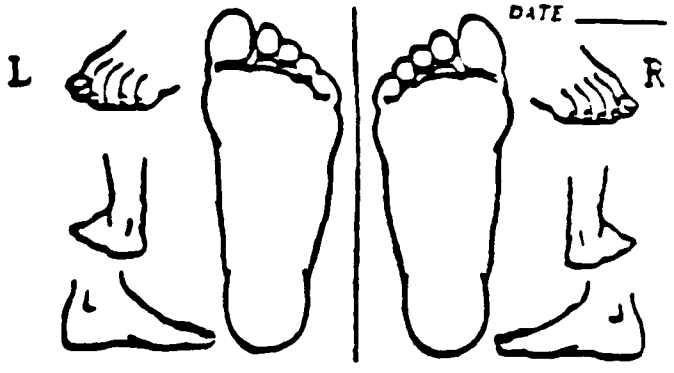
DATE _____ *SUBJECT #* _____

PHASE # _____

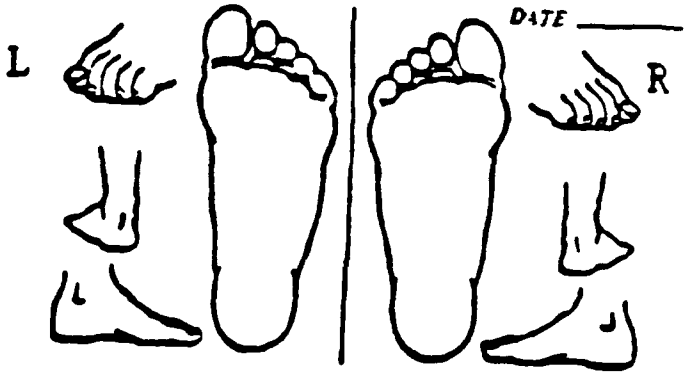
MONDAY



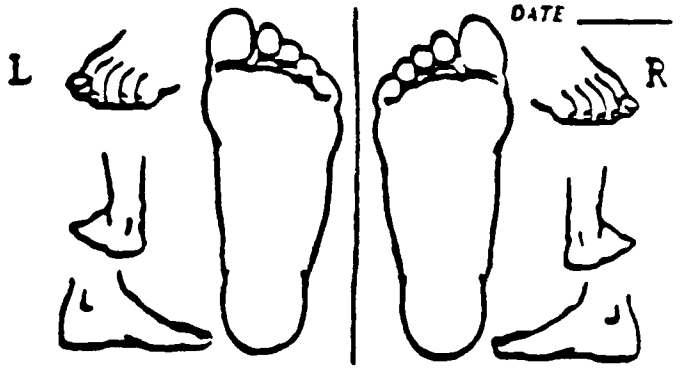
TUESDAY



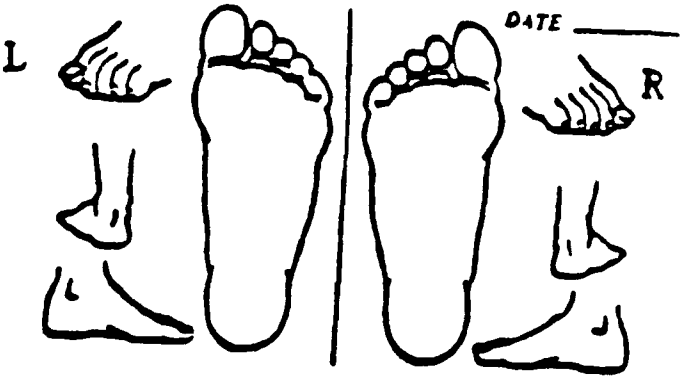
WEDNESDAY



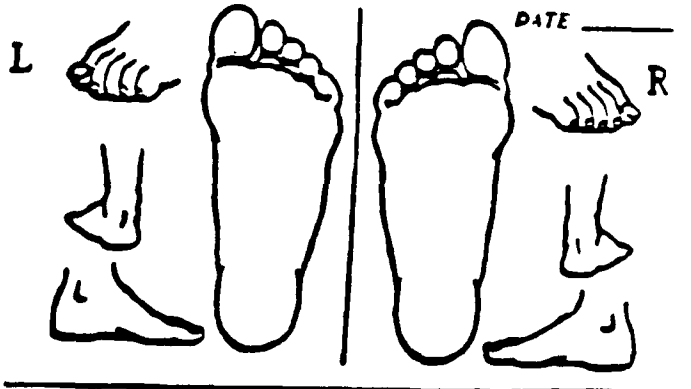
THURSDAY



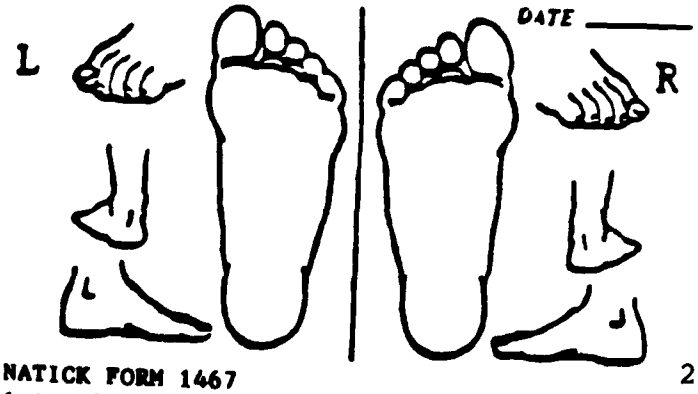
FRIDAY



SATURDAY



SUNDAY



BLISTER CODE:

UNBROKEN BLISTER	⬭	RUPTURED BLISTER	⊗
HOT SPOT	(H)	ULCER	(U)
OLD BLISTER	●	BLOOD BLISTER	(B)
INFECTION	(I)	CELLULITIS	(C)

MALE
LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	MONDAY	TUESDAY	WEDNESDAY	TUHRSDAY	TD 1 * FRIDAY	TD 2 * SATURDAY	TIME
0600	[redacted]				[redacted]	[redacted]	0600
0620							0620
0630							0630
0650							0650
0700					T/CIRCUIT COUSRE	T/F 1.5 INTRO TO "O" CRS	0700
0720							0720
0730							0730
0750							0750
0800							0800
0820						P1701 1.5 MOVEMENT	0820
0830							0830
0850					P1701 2.0 UTILITY UNIFORM	.5 HISTORY 1775-1897	0850
0900							0900
0920							0920
0930							0930
0950							0950
1000					G0402A 1.0 MARKING INITIAL ISSUE		1000
1020						G0201A 1.5 HISTORY 1898-1938	1020
1030							1030
1050							1050
1100							1100
1120					G0403A 1.5 NOON MEAL		1120
1130							1130
1150						G0201B 1.5 NOON MEAL	1150
1200							1200
1220							1220
1230					1.0 INTERIOR GUARD		1230
1250						1.0 UCMJ/TYPES OF DISCHARGES	1250
1300							1300
1320							1320
1330							1330
1350							1350
1400							1400
1420					GC1401A 2.0 CUSTOMS & COURTESY		1420
1430							1430
1450						G0201A	1450
1500						G0201B 2.0 MAINT OF THE M16A2	1500
1520							1520
1530							1530
1550					G0202A 1.5 M16A2 INTRO		1550
1600							1600
1620							1620
1630							1630
1650					GC0201A		1650
1700					1.0		1700
1720						GC0201B	1720
1730						2.5	1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 3 * MONDAY	TD 4 TUESDAY	TD 5 * WEDNESDAY	TD 6 * THURSDAY	TD 7 * FRIDAY	TD 8 * SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630							0630
0650							0650
0700	HAIRCUTS 1	DENTAL RECALL (1)	T/F 2.0 FARKLET COURSE	CLOSE ORDER DRILL	T/F 2.0 CIRCUIT COURSE	COMMANDER TIME	0700
0720							0720
0730							0730
0750	1.0						0750
0800	T/F 1.5						0800
0820							0820
0830	"O" CRS						0830
0850			P1701 2.0	G0301 2.0	P1701 2.0	2.0	0850
0900			CLOSE ORDER DRILL	COMBAT HITTING SKILLS (2)	CLOSE ORDER DRILL	CLOSE ORDER DRILL	0900
0920							0920
0930							0930
0950	P1701 2.0						0950
1000	COMMANDER TIME .5						1000
1020							1020
1030	COMBAT HITTING SKILLS (1)		G0301 2.0	PO601B 2.0	G0301 2.0	G0301 2.0	1030
1050			NOON MEAL	MOVEMENT .5	NOON MEAL	NOON MEAL	1050
1100		4.5		NOON MEAL			1100
1120		NOON MEAL	1.0		1.0	1.0	1120
1130			MOVEMENT .5	1.0	MOVEMENT .5	COMMANDER TIME .5	1130
1150		1.0	FUNCT. OF M16A2 RFL GC0201C 1.0	DENTAL RECALL (2)	COMBAT HITTING SKILLS (3)	MOVEMENT TIME .5	1150
1200	P0601A 2.0	MOVEMENT .5	MOVEMENT .5			COMBAT SURVIVAL SWIM (1)	1200
1220	NOON MEAL	HISTORY 1950-1963	LIFE SAVING STEPS		P0601C 2.0 CONFIDENCE COURSE		1220
1230		G0201D 1.0 HISTORY 1964-1975		2.5 MOVEMENT .5			1230
1250	1.0			HISTORY 1976 TO PRESENT			1250
1300	CLOSE ORDER DRILL						1300
1320					P1702 2.0		1320
1330							1330
1350							1350
1400							1400
1420	G0301 2.0 HISTORY 19390-1949	G0201E 2.0 INTRO TO LEADERSHIP REQUEST MAST					1420
1430							1430
1450							1450
1500							1500
1520				G0201F 1.5		P1801 4.0	1520
1530							1530
1550		G0501	GC0901A				1550
1600							1600
1620							1620
1630	G0201C 2.0	G0502 1.5	3.5				1630
1650							1650
1700							1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 9 * MONDAY	TD 10 * TUESDAY	TD 11 WEDNESDAY	TD 12 * THURSDAY	TD 13 FRIDAY	TD 14 * SATURDAY	TIME
0600	[redacted]				FIRST AID TESTING	[redacted]	0600
0620							0620
0630							0630
0650							0650
0700	T72.0 BOOTS	CIRCUIT COURSE & SPRINTS	HAIRCUTS (2)	CONFIDENCE COURSE		CONDITION MARCH 5 Mi	0700
0720							0720
0730			1.0				0730
0750			COMMANDER TIME .5				0750
0800			MOVEMENT .5				0800
0820							0820
0830							0830
0850	P1701 2.0	P1701 2.0		P1702 2.0	3.0	P1704 2.0	0850
0900	CLOSE ORDER DRILL	LINE I PROGRAM PART 1	LIFE SAVING STEPS (2)	INTRO TO BAYONET	PUGIL STICKS (1)	COMMANDER TIME .5	0900
0920							0920
0930						CLOSE ORDER DRILL	0930
0950							0950
1000							1000
1020							1020
1030							1030
1050	G0301 3.0	P0603A 2.0	GC0901B	P0602A 2.0	P0602B 2.0		1050
1100	NOON MEAL	NOON MEAL	2.5	MOVEMENT .5	NOON MEAL	G0301 2.0	1100
1120			MOVEMENT .5			NOON MEAL	1120
1130	1.0	1.0		NOON MEAL	1.0		1130
1150	COMMANDER TIME .5	DENTAL RECALL (3)	NOON MEAL	1.0	MOVEMENT .5	1.0	1150
1200	MOVEMENT .5			MOVEMENT .5	COMBAT SURVIVAL SWIM (4)	MOVEMENT .5	1200
1220	COMBAT SURVIVAL SWIM (2)		1.0	COMBAT SURVIVAL SWIM (3)		HEAT,COLD & BURNS INJURY	1220
1230			CLOSE ORDER DRILL				1230
1250							1250
1300							1300
1320							1320
1330							1330
1350							1350
1400							1400
1420		2.5					1420
1430		FRACT & TRANS OF INJURED				GC0901D 2.0	1430
1450			G0301 2.0				1450
1500			COMMANDER TIME .5			SNAKE, INSECT & ANIMAL BITES	1500
1520			MOVEMENT .5				1520
1530			CUSTOMS & COURTESIES				1530
1550							1550
1600							1600
1620							1620
1630		GC0901C 2.0					1630
1650						GC0901E 2.0	1650
1700	P1801 4.0		G0202B 1.0	P1801 4.0	P1801 4.0		1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE
LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 15 * MONDAY	TD 16 * TUESDAY	TD 17 * WEDNESDAY	TD 18 * THURSDAY	TD 19 FRIDAY	TD 20 * SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630							0630
0650							0650
0700	T/T 3.0	TERRORISM SECURITY & MILITARY INFROMATION	INITIAL P.F.T.	ACADEMICS TESTING	COLORS CEREMONY	SUBSTANCE ABUSE I & II	0700
0720							0720
0730							0730
0750							0750
0800							0800
0820							0820
0830		GC1401B 2.0					0830
0850	P1701 1.0	CLOSE ORDER DRILL	P1701 2.0	2.0	2.0	F1002A 2.0	0850
0900	CLOSE ORDER DRILL		MOVEMENT .5	MOVEMENT .5	MOVEMENT .5	MOVEMENT .5	0900
0920			PITTERS APPOINTMNT	CONFIDENCE COURSE	MCX		0920
0930							0930
0950							0950
1000						SET UP BARRACKS	1000
1020		1.5 HAIRCUT (3)					1020
1030							1030
1050	G0301 2.0				1.5		1050
1100	NOON MEAL				COMMANDER TIME		1100
1120		MOVEMENT .5	2.0	P1704 2.0		2.0	1120
1130			NOON MEAL	COMMANDER TIME	1.0	NOON MEAL	1130
1150	1.0	NOON MEAL			NOON MEAL		1150
1200	INIT TRAV BRIEF .5		1.0	1.0		1.0	1200
1220	DENTAL RECALL (4)		COMMANDER TIME .5	NOON MEAL	1.0	MOVEMENT .5	1220
1230		1.0 SDI INSPEC	INITIAL DRILL EVAL		CLOSE ORDER DRILL	PUGIL STICKS (3)	1230
1250				1.0			1250
1300				COMMANDER TIME			1300
1320							1320
1330							1330
1350							1350
1400							1400
1420							1420
1430							1430
1450		G0401 2.0	G0301 2.0	1.5	G0301 2.0	P0602D 2.0	1450
1500		PUGIL STICKS (2)	MOVEMENT .5	COLORS REHEARSAL	MOVEMENT .5	SERVICE UNIFORMS/ GROOMING STANDARDS	1500
1520	3.0		SHOTS (02)		COMMANDER TIME		1520
1530	LAW OF WAR CODE OF CONDUCT						1530
1550							1550
1600							1600
1620							1620
1630							1630
1650						G0402B	1650
1700	G0103 1.5	P0602C 2.0	2.0	2.0	1.5	G0402E 2.0	1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE GRAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 21 MONDAY	TD 22 TUESDAY	TD 23 WEDNESDAY	TD 24 THURSDAY	TD 25 FRIDAY	TD 26 * SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630	CLOTHING (02)	T/1 2.5 W/BOOTS	T/CIRCUIT COURSE		T/3.0 ABILITY RUN		0630
0650						CONDITION MARCH 7.5 Mi	0650
0700							0700
0720							0720
0730							0730
0750							0750
0800							0800
0820		P1701 2.0	P1701 2.0		P1701 2.0		0820
0830							0830
0850							0850
0900							0900
0920							0920
0930							0930
0950						P1704 3.0	0950
1000						LINE	1000
1020						PROGRAM 1	1020
1030						PART 2	1030
1050							1050
1100							1100
1120							1120
1130							1130
1150	5.5		HAIRCUT(4)			P0603A 2.0	1150
1200			NOON MEAL			NOON MEAL	1200
1220							1220
1230			1.0				1230
1250						1.0	1250
1300						SEX HARSS	1300
1320						EQUAL OPP	1320
1330						FRATZATION	1330
1350						G0706	1350
1400						G0707	1400
1420						G0708 1.5	1420
1430						CLOSE	1430
1450						ORDER	1450
1500						DRILL	1500
1520							1520
1530							1530
1550							1550
1600							1600
1620							1620
1630						G0301 2.0	1630
1650							1650
1700							1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

[redacted]

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 27 MONDAY	TD 28 TUESDAY	TD 29 WEDNESDAY	TD 30 THURSDAY	TD 31 FRIDAY	TD 32 * SATURDAY	TIME
0600							0600
0620							0620
0630							0630
0650							0650
0700						CONDITION	0700
0720						MARCH	0720
0730						10 MILE	0730
0750							0750
0800							0800
0820							0820
0830							0830
0850							0850
0900							0900
0920							0920
0930							0930
0950							0950
1000							1000
1020							1020
1030							1030
1050						P1704 4.0	1050
1100						RECOVERY/	1100
1120						MVT .5	1120
1130						NOON MEAL	1130
1150							1150
1200							1200
1220						1.0	1220
1230						LINE	1230
1250						PROGRAM 2	1250
1300							1300
1320							1320
1330							1330
1350							1350
1400							1400
1420						P0603C 2.0	1420
1430						COMMANDER	1430
1450						TIME	1450
1500							1500
1520							1520
1530		F/1.5			F/2.0		1530
1550		W/BOOTS			W/BOOTS		1550
1600							1600
1620							1620
1630							1630
1650							1650
1700		P1701 1.5			P1701 1.5	2.5	1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

FIRING WEEK

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

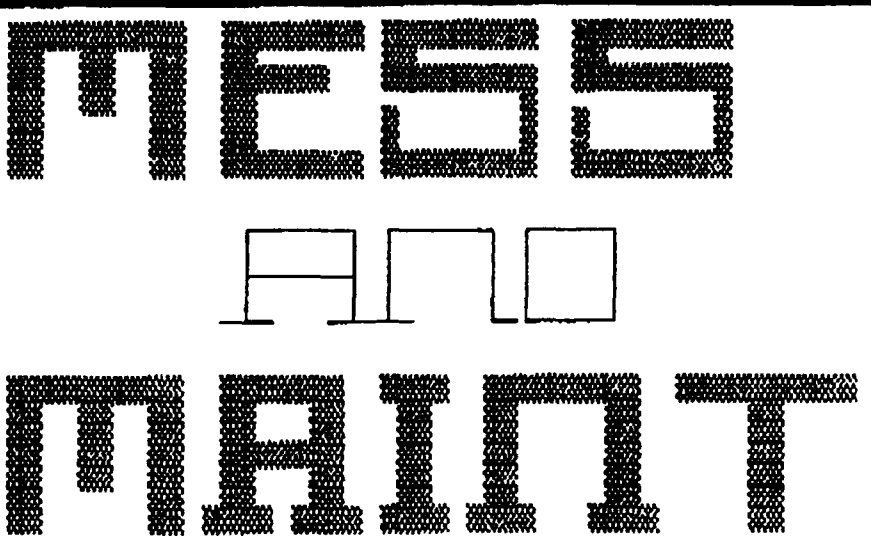
MALE LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TD 33 *

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	TIME
0600							0600
0620							0620
0630							0630
0650							0650
0700	COMMANDER TIME	M&M	M&M	M&M	M&M	M&M	0700
0720							0720
0730	1.0						0730
0750							0750
0800	MOVEMENT						0800
0820	.5						0820
0830	SEXUAL RESPONSIB TO THE MARINE						0830
0850							0850
0900							0900
0920							0920
0930							0930
0950							0950
1000							1000
1020							1020
1030							1030
1050	G0301 2.0						1050
1100	NOON MEAL						1100
1120							1120
1130							1130
1150	1.0						1150
1200	PREP FOR MESS & MAINT./ PHYSICALS						1200
1220							1220
1230							1230
1250							1250
1300							1300
1320							1320
1330							1330
1350	3.0						1350
1400							1400
1420	MESS DUTY BEGINS						1420
1430							1430
1450							1450
1500							1500
1520							1520
1530							1530
1550							1550
1600							1600
1620							1620
1630							1630
1650							1650
1700							1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1350
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300



T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	M&M MONDAY	TD 34 * TUESDAY	TD 35 * WEDNESDAY	TD 36 * THURSDAY	TD 37 * FRIDAY	TD 38(D-1) * SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630							0630
0650							0650
0700		HAIRCUT (5)	T/F 3.0	CLOTHING (03)	T/F 3.0	ADMIN MOVE TO B.W.T.	0700
0720							0720
0730							0730
0750		1.0		MOVEMENT TIME			0750
0800		MOVEMENT				1.5	0800
0820		.5	1.5	NOON MEAL		INTRO TO	0820
0830		INDIVIDUAL PHOTOS	MCX		P1701 2.0	FTC .5	0830
0850				782 GEAR ISSUE	PERSONAL ASSISTANCE	DAY MOVEMENT	0850
0900						CAMOUFLAGE COVER AND CONCEALMNT	0900
0920					G0503 1.0		0920
0930			1.5	BASIC FIELD SKILLS 2	MOVEMENT		0930
0950			COMMANDER TIME		.5		0950
1000		2.0			CLOSE ORDER DRILL		1000
1020		MOVEMENT	1.0				1020
1030		.5	NOON MEAL				1030
1050		NOON MEAL					1050
1100							1100
1120							1120
1130							1130
1150		1.0	1.0			3.0	1150
1200		CLOSE ORDER DRILL	CLOSE ORDER DRILL		G0301 2.0	NOON MEAL	1200
1220					NOON MEAL		1220
1230							1230
1250					1.0	1.0	1250
1300						DAY MOVEMENT STATIONS	1300
1320					*BATTALION COMMANDER'S TIME*		1320
1330							1330
1350							1350
1400		G0301 2.0	G0301 2.0				1400
1420		COMMANDER TIME	COMMANDER TIME				1420
1430						2.0	1430
1450			1.0			DAY MVT CRS BRIEF	1450
1500			SERIES COMMANDER INSPECTION				1500
1520		1.5				DAY MOVEMENT COURSE	1520
1530		IST TRAVEL BOOKING					1530
1550							1550
1600							1600
1620							1620
1630		1.0		9.5			1630
1650					2.5		1650
1700			2.0			2.0	1700
1720						EVEN MEAL	1720
1730							1730
1750							1750
1800							1800
1820						1.0	1820
1830						NIGHT MOVEMENT STATIONS	1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030						2.0	2030
2050						NIGHT MOVEMENT PRAC. APP.	2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300						2.0	2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE
LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 39(D-2) MONDAY	TD 40(D-3) TUESDAY	TD 41(D-4) WEDNESDAY	TD 42(D-5) THURSDAY	TD 43(D-6) FRIDAY	TD 44(D-7) SATURDAY	TIME
0600	T/3.5	[redacted]					0600
0620	ABILITY/						0620
0630	RECOVERY/		COMBAT			BRIEF/PREP	0630
0650	MOVEMENT		CONDITION			DAY MVT .5	0650
0700		COMPASS I	COURSE	PRC-77	FPM CLASS	DAY	0700
0720		CLASS		CLASS		MOVEMNET	0720
0730						COURSE	0730
0750	2.0						0750
0800	MARINE						0800
0820	RIFLE	1.5		1.0			0820
0830	FIRETEAM	DAY COMPASS		SEND & REC			0830
0850	1.0	STATIONS	3.0	MSG .5	2.0		0850
0900	CMBT FORM		GRENADE	TA-17/	ISSUE FPM/		0900
0920	H/A SIGNAL		CLASS	TA-312 CLS	CHAMBER		0920
0930	CLASS				PREP		0930
0950	1.0		1.0	1.0	1.0	3.0	0950
1000	CMBT FORM		GRENADE	PRACTICAL	CHAMBER PA	FAST ROPE/	1000
1020	H/A SIGNAL		PRAC	EVALUATION	.5	RAPPELLING	1020
1030	P/A CRS		STATION		RECOVERY		1030
1050			1.0	1.0	.5		1050
1100			GRENADE	NOON MEAL	NBC DEF CLS		1100
1120			PRAC APP/				1120
1130			EVAL				1130
1150		3.5		1.0	1.0		1150
1200		NOON MEAL		IND ACT IN	NOON MEAL		1200
1220				DEF CLASS			1220
1230							1230
1250	3.0			1.0	1.0		1250
1300	NOON MEAL	1.0		TRANS TO	NBC TRAIL		1300
1320		DAY COMPASS		E-BEACH .5	BRF .5		1320
1330		COURSE		DEFENSE	NBC DEF		1330
1350	1.0			PRAC APP	TESTING/		1350
1400	MINES CLS				PRAC APP		1400
1420	.5				1.0		1420
1430	MINES				NBC TRAIL		1430
1450					PREP/ PA		1450
1500							1500
1520			3.5			5.5	1520
1530			FIELD			PTU MAINT	1530
1550		3.0	SANITATION				1550
1600		MAPPING I	CLASS				1600
1620		CLASS	1.0		2.0		1620
1630			EVEN MEAL		GEAR TURN		1630
1650		1.0			IN .5		1650
1700		EVEN MEAL			NBC DEF		1700
1720	3.0			4.0	DEBRF .5		1720
1730	EVEN MEAL			TRANS TO	REMEDIATE		1730
1750		1.0	1.0	PAGE FLD	FAIL 1.0	2.0	1750
1800		MAPPING II	COMPASS II	EVEN MEAL	HYGIENE	TRANSPORT	1800
1820	1.0	MAPPING III	CLS .5	.5		TO WPNS BN	1820
1830	HELO AMPHB		NIGHT	HOT SHOWER			1830
1850	INDOC CLS		COMPASS				1850
1900			STATIONS				1900
1920	1.0		1.0	1.0			1920
1930	5 PARAGPH		NIGHT	NIGHT			1930
1950	ORDER CLS		COMPASS	COMPASS			1950
2000	.5		PREP/CRS	FAILURE			2000
2020		2.5		RETEST			2020
2030		NIGHT					2030
2050		PACE COUNT					2050
2100							2100
2120		1.0					2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300				3.0			2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE
LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 45(D-8) MONDAY	TD 46(D-9) TUESDAY	TD 47(D-10) WEDNESDAY	TD 48(D-11) THURSDAY	TD 49 * FRIDAY	TD 50 SATURDAY	TIME
0600							0600
0620							0620
0630							0630
0650				CBT ASSLT CRS BRIEF 1.0			0650
0700	A-LINE	A-LINE	A-LINE	AMPHIB IND F0506 .5	T/F 3.5	CLOSE ORDER	0700
0720				COMBAT ASSAULT COURSE		DRILL	0720
0730							0730
0750							0750
0800				P0602E 1.0	P1701 2.0	G0301 2.0	0800
0820				REARM CAC	COMMANDER TIME	CONFIDENCE COURSE	0820
0830							0830
0850				1.0			0850
0900				CMBT FORM H&A SIGNS PRAS APP			0900
0920							0920
0930						P1702 2.0	0930
0950						MOVEMENT .5	0950
1000				F0504 1.5			1000
1020			HAIRIUTS (6)	NOON MEAL/ POLICE/MVT	3.0	NOON MEAL	1020
1030					NOON MEAL		1030
1050				1.0		1.0	1050
1100			NOON MEAL	FTC	1.0	LEAVE LIB	1100
1120				DEBRIEF	COMMANDER TIME	REPORTING	1120
1130							1130
1150			WPNS TEST	1.0		G0705 1.0	1150
1200				MTC BRIEF		DRESS BLUE	1200
1220			1.0			G0402C .5	1220
1230			COMMANDER TIME/ BARRACKS TURN IN	1.0		CIV ATTIRE	1230
1250				COMMANDER TIME		G0402D .5	1250
1300						COMMANDER TIME	1300
1320							1320
1330							1330
1350							1350
1400							1400
1420							1420
1430							1430
1450							1450
1500							1500
1520							1520
1530							1530
1550							1550
1600							1600
1620			3.0				1620
1630			MOVEMENT TO MAIN SIDE				1630
1650							1650
1700				2.5	4.0	2.5	1700
1720							1720
1730							1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300		4<<<<<=<<<8					2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE LEAD SERIES **TRAINING OUTLINE PLAN (T.O.P.)** **93/02/12**

TIME	TD 51 * MONDAY	TD 52 TUESDAY	TD 53 * WEDNESDAY	TD 54 * THURSDAY	TD 55 FRIDAY	TD 56 * SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630							0630
0650							0650
0700	T/I 4.0	ORDERS &	T/I 3.0	T/3.0	COMMANDER	FINAL	0700
0720	DENTAL 5	ID CARDS/		FARTLEK	TIME 1.0	DRILL	0720
0730	BY APPT	CMD BRIEF/		CRS	COMPANY	EVAL	0730
0750	ONLY	SRB/RLS			COMMANDER		0750
0800					INSPECTION *		0800
0820					*		0820
0830							0830
0850	2.0		2.0	2.0	*	G0301 2.0	0850
0900	COMMANDER		MOVEMENT	CLOSE		COMMANDER	0900
0920	TIME		.5	ORDER	PLATOONS	TIME	0920
0930			782 GEAR	DRILL	PHOTOS		0930
0950	1.0		TURN IN				0950
1000	MOVEMENT				G0401 3.0		1000
1020	.5				WPNS MAINT.		1020
1030	HAIRCUTS	G0703 4.0	1.5	G0301 2.0		2.0	1030
1050	(7)	COMMANDER	MOVEMENT	NOON MEAL	G0503 1.0	NOON MEAL	1050
1100		TIME	.5		NOON MEAL		1100
1120	1.0		NOON MEAL	1.0		-	1120
1130	MOVEMENT	1.0		FINAL TRAV		1.0	1130
1150	.5	NOON MEAL	1.0	BRIEF .5	1.0	COMMANDER	1150
1200	NOON MEAL		COMMANDER	COMMANDER	COMMANDER	TIME	1200
1220			TIME	TIME	TIME		1220
1230						1.0	1230
1250	1.0	1.0	1.0			PAO BRIEF	1250
1300		PROM/PRO					1300
1320		CON MARKS	CLOSE			1.0	1320
1330	*CUSTOMS &*	EDUCATION	ORDER				1330
1350	*COURTESIES*	BENEFITS	DRILL			LEAVE &	1350
1400	*PRAC APP*	G0701			2.5	LIBERTY	1400
1420	*TEST*	G0702 1.5			CLOSE	CLASS 1.0	1420
1430		CLOSE			ORDER		1430
1450		ORDER			DRILL	MOS	1450
1500		DRILL	G0301 2.0			STRUCTURE	1500
1520			COMMANDER				1520
1530			TIME			G0704 1.0	1530
1550						RIFLE	1550
1600		G0301 2.0				MAINT.	1600
1620		COMMANDER					1620
1630		TIME				GC0201B	1630
1650							1650
1700	4.0	.5	1.5	4.5	G0301 2.0	1.0	1700
1720							1720
1730							1730
1750						-	1750
1800							1800
1820							1820
1830							1830
1850							1850
1900							1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

T - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

MALE •
LEAD SERIES

TRAINING OUTLINE PLAN (T.O.P.)

93/02/12

TIME	TD 57 * MONDAY	TD 58 TUESDAY	TD 59 WEDNESDAY	TD 60 THURSDAY	TD 61 FRIDAY	SATURDAY	TIME
0600	[redacted]						0600
0620							0620
0630				MOT RUN 5 Mi			0630
0650							0650
0700	FINAL PHYSICAL FITNESS TEST	BATTALION COMMANDER INSPECTION	CASH CHECKS/ PAY BILLS		GRADUATION REHEARSAL		0700
0720				P1701 1.5			0720
0730	P1701 1.5	-		COMMANDER TIME .5	G0301 1.0		0730
0750	MOVEMENT .5			MOVEMENT .5	GRADUATION PREPARATION		0750
0800							0800
0820	INITIAL ISSUE TURN IN			GRADUATION REHEARSAL	1.0		0820
0830					GRADUATION CEREMONY		0830
0850							0850
0900		G0401 3.0					0900
0920		MOVEMENT .5					0920
0930							0930
0950	1.5	CLOTHING (04)					0950
1000	HAIRCUTS (8)						1000
1020			4.5				1020
1030			COMMANDER TIME	G0301 3.0			1030
1050		1.5		NOON MEAL			1050
1100		NOON MEAL					1100
1120	1.0		1.0				1120
1130	COMMANDER TIME		NOON MEAL				1130
1150				1.0			1150
1200		1.0		MARK FINAL ISSUE			1200
1220	1.0	RIFLE TURN IN	1.0				1220
1230	NOON MEAL		COMMANDER TIME				1230
1250				1.5			1250
1300				RECRUIT LIBERTY			1300
1320	1.0						1320
1330	MOVEMENT		1.5				1330
1350	.5		MOVEMENT .5				1350
1400	INOCU (03)		GRADUATION REHEARSAL				1400
1420							1420
1430							1430
1450							1450
1500							1500
1520	1.5	2.5					1520
1530	FINAL PAY	COMMANDER TIME .5					1530
1550		INDOOR GRADUATION REHEARSAL					1550
1600							1600
1620							1620
1630							1630
1650							1650
1700	1.5	1.0					1700
1720							1720
1730			G0301 2.0				1730
1750							1750
1800							1800
1820							1820
1830							1830
1850							1850
1900				4.5			1900
1920							1920
1930							1930
1950							1950
2000							2000
2020							2020
2030							2030
2050							2050
2100							2100
2120							2120
2130							2130
2150							2150
2200							2200
2220							2220
2230							2230
2250							2250
2300							2300

* - TABLE I - INDIVIDUAL RUN F - FORMATION RUN D - DEVELOPMENTAL EXERCISE

DISTRIBUTION LIST

6 Copies to:

Commander
MARCORSYSCOM
ATTN: SSC
2033 Bennett Avenue, Suite 315
Quantico, VA 22134-5010

2 Copies to:

Defense Technical Information Center
ATTN: DTIC-DDA
Alexandria, VA 22304-6145

Office of the Assistant Secretary of Defense (Hlth Affairs)
ATTN: Medical Readiness
Washington, DC 20301-1200

Commander
U.S. Army Medical Research and Development Command
ATTN: SGRD-OP
Fort Detrick
Frederick, MD 21702-5012

Commander
U.S. Army Medical Research and Development Command
ATTN: SGRD-PLC
Fort Detrick
Frederick, MD 21702-5012

Commander
U.S. Army Medical Research and Development Command
ATTN: SGRD-PLE
Fort Detrick
Frederick, MD 21702-5012

Commandant
Army Medical Department Center and School
ATTN: HSMC-FM, Bldg 2840
Fort Sam Houston, TX 78236

1 Copy to:

Joint Chiefs of Staff
Medical Plans and Operations Division
Deputy Director for Medical Readiness
ATTN: RAD Smyth
Pentagon, Washington, DC 20310

HQDA
Office of the Surgeon General
Preventive Medicine Consultant
ATTN: SGPS-PSP
5109 Leesburg Pike
Falls Church, VA 22041-3258

HQDA
Assistant Secretary of the Army for Research, Development and Acquisition
ATTN: SARD-TM
Pentagon, Washington, DC 20310

HQDA
Office of the Surgeon General
ATTN: DASG-ZA
5109 Leesburg Pike
Falls Church, VA 22041-3258

HQDA
Office of the Surgeon General
Assistant Surgeon General
ATTN: DASG-RDZ/Executive Assistant
Room 3E368, The Pentagon
Washington, DC 20310-2300

HQDA
Office of the Surgeon General
ATTN: DASG-MS
5109 Leesburg Pike
Falls Church, VA 22041-3258

Dean
School of Medicine
Uniformed Services University of the Health Sciences
4301 Jones Bridge Road
Bethesda, MD 20814-4799

Department of Military and Emergency Medicine
Uniformed University of Health Sciences
4301 Jones Bridge Road
Bethesda, MD 20814-4799

Stimson Library
Army Medical Department Center & School
ATTN: Chief Librarian
Bldg 2840, Room 106
Fort Sam Houston, TX 78234-6100

Commandant
Army Medical Department Center & School
ATTN: Director of Combat Development
Fort Sam Houston, TX 78234-6100

Commander
U.S. Army Aeromedical Research Laboratory
ATTN: SGRD-UAX-SI
Fort Rucker, AL 36362-5292

Commander
U.S. Army Medical Research Institute of Chemical Defense
ATTN: SGRD-UVZ
Aberdeen Proving Ground, MD 21010-5425

Commander
U.S. Army Medical Material Development Activity
ATTN: SGRD-UMZ
Fort Detrick
Frederick, MD 21702-5009

Commander
U.S. Army Institute of Surgical Research
ATTN: SGRD-USZ
Fort Sam Houston, TX 78234-6200

Commander
U.S. Army Medical Research Institute of Infectious Disease
ATTN: SGRD-UIZ-A
Fort Detrick, MD 21702-5011

Director
Walter Reed Army Institute of Research
ATTN: SGRD-UWZ-C (Director for Research Management)
Washington, DC 20307-5100

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-Z
Natick, MA 01760-5000

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-T
Natick, MA 01760-5002

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-MIL
Natick, MA 01760-5040

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-I
Natick, MA 01760-5019

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-IC
Natick, MA 01760-5019

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-IU
Natick, MA 01760-5019

Commander
U.S. Army Natick Research, Development & Engineering Center
ATTN: SATNC-ICC
Natick, MA 01760-5019

Commander
U.S. Army Research Institute for Behavioral Sciences
5001 Eisenhower Avenue
Alexandria, VA 22333-5600

Commander
U.S. Army Training and Doctrine Command
Office of the Surgeon
ATTN: ATMD
Fort Monroe, VA 23651-5000

Commander
U.S. Army Environmental Hygiene Agency
Aberdeen Proving Ground, MD 21010-5422

Director, Biological Sciences Division
Office of Naval Research - Code 141
800 N. Quincy Street
Arlington, VA 22217

Commanding Officer
Naval Medical Research & Development Command
NNMC/Bldg 1
Bethesda, MD 20889-5044

Commanding Officer
U.S. Navy Clothing & Textile Research Facility
ATTN: NCTRF-01
Natick, MA 01760-5000

Commanding Officer
Navy Environmental Health Center
2510 Walmer Avenue
Norfolk, VA 23513-2617

Commanding Officer
Naval Aerospace Medical Institute (Code 32)
Naval Air Station
Pensacola, FL 32508-5600

Commanding Officer
Naval Medical Research Institute
Bethesda, MD 20889

Commanding Officer
Naval Health Research Center
P.O. Box 85122
San Diego, CA 92138-9174

Commander
Armstrong Medical Research Laboratory
Wright-Patterson Air Force Base, OH 45433

Commander
USAF Armstrong Medical Research Laboratory
ATTN: Technical Library
Brooks Air Force Base, TX 78235-5301

Commander
US Air Force School of Aerospace Medicine
Brooks Air Force Base, TX 78235-5000

PM Soldier
14050 Dawson Beach Road
Woodbridge, VA 22191-1419

HQ, Ranger Training Brigade
ATTN: COL Church/Bldg. 5024
Ft. Benning, GA 31905-5430

Commanding General
U.S. Army Safety Center
Ft. Rucker, AL 36362

Commander
U.S. Army Infantry School
Ft. Benning, GA 31905

Commander
75th Ranger Regiment
Ft. Benning, GA 31905

Commander
4th Ranger Training Brigade
Ft. Benning, GA 31905

Commander
5th Ranger Training Battalion
Camp Merrill
Dahlonega, GA 30533

Commander
6th Ranger Training Battalion
Camp Rudder
Elgin AFB, FL 32542

Commander
JFK Special Warfare Center and School
ATTN: AOJK-SU
Ft. Bragg, NC 28307

Director
Army Physical Fitness Research Institute
Army War College
Carlisle Barracks, PA 17013

Director
Special Forces Combat Developments
Ft Bragg, NC 28307

Director
Human Research & Engineering
US Army Research Laboratory
Aberdeen Proving Ground, MD 21005-5001