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FRACTURES OF THE ANKLE IN A MILITARY POPULATION.  
A. M. Martinson and G. W. Cady. Naval Hospital,  
San Diego.

Review of three hundred twenty-seven ankle fractures admitted to Naval Hospital, San Diego, in order to formulate a concept of anatomic reduction and fixation. The distal tibio-fibular angle was used as a guide to the adequacy of reduction. This angle is basically analogous to the axis of rotation of the tibio-talar joint and does not vary more than two degrees between the two ankles of a normal individual. Failure to restore the angle to normal following a fracture is usually due to persistent shortening or external rotation of the distal fibular fragment. This leads to abnormal biomechanical function of the joint and correlates well with less than optimal clinical results. Measurement of the angle is a simple method for judging the adequacy of reduction. This study emphasizes the importance of the lateral malleolus in the treatment of ankle fractures and in the end results of that treatment.

M4305.05-3071AGG2

28 FEB 1973

SUBSPECIALTY: Orthopedic

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| RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY   |                    |                               |                | 74 07 01*  |                                      | DD-DR&E (AR)<br>636 (3900) |                          |
|---|--------------------|-------------------------------|----------------|--|--------------------------------------|----------------------------|--------------------------|
| 1. DATE THIS SUMMARY  | 2. KIND OF SUMMARY | 3. AWARD OR CONTRACT NUMBER   | 4. PROGRAM     | 5. CONTRACT NUMBER   | 6. SPECIAL INQUIRY CONTRACTOR AGENCY | 7. YES                     | 8. NO                    |
| 73 07 01*   | D. Change          | U U                           | N/A            | NL   |                                      | <input type="checkbox"/>   | <input type="checkbox"/> |
| 9. CODES  |                    | PROGRAM ELEMENT               | PROJECT NUMBER | TASK AREA NUMBER   | WORK UNIT NUMBER                     |                            |                          |
| a. PRIMARY  |                    | 63706N                        | M4305          | .05  | .3071AGG2                            |                            |                          |
| b. CONTRIBUTING   |                    |                               |                |  |                                      |                            |                          |
| c. CONTRIBUTING   |                    |                               |                |  |                                      |                            |                          |
| 11. TITLE (Precede FACH with Security Classification Code)*   |                    |                               |                |  |                                      |                            |                          |
| (U) Fractures of the Ankle in a Military Population   |                    |                               |                |  |                                      |                            |                          |
| 12. SCIENTIFIC AND TECHNOLOGICAL AREAS*   |                    |                               |                |  |                                      |                            |                          |
| 003500 Clinica Medicine 12900 Physiology  |                    |                               |                |  |                                      |                            |                          |
| 13. START DATE  |                    | 14. ESTIMATED COMPLETION DATE |                | 15. FUNDING AGENCY   |                                      | 16. PERFORMANCE METHOD     |                          |
| 71 07   |                    | 75 06                         |                | DN   |                                      | C. In-house                |                          |
| 17. CONTRACT, GRANT   |                    |                               |                | 18. RESOURCES ESTIMATE   |                                      | a. PROFESSIONAL MAN YEARS  |                          |
| b. DATES/EFFECTIVE:   |                    |                               |                | PRECEDING  |                                      | d. FUNDS (In thousands)    |                          |
| c. EXPIRATION:  |                    |                               |                | 1974*  |                                      | .25                        |                          |
| 19. KIND OF AWARD:  |                    |                               |                | FISCAL YEAR  |                                      | 3K                         |                          |
| d. AMOUNT:  |                    |                               |                | CURRENT  |                                      | 3K                         |                          |
| 1975*   |                    |                               |                |  |                                      | 3K                         |                          |
| 20. RESPONSIBLE GOV. ORGANIZATION   |                    |                               |                | 20. PERFORMING ORGANIZATION  |                                      |                            |                          |
| NAME: Naval Hospital  |                    |                               |                | NAME: Orthopedic Department  |                                      |                            |                          |
| ADDRESS: San Diego, California 92134  |                    |                               |                | ADDRESS: Naval Hospital  |                                      |                            |                          |
|   |                    |                               |                | ADDRESS: San Diego, California 92134                               |                                      |                            |                          |
| RESPONSIBLE INDIVIDUAL  |                    |                               |                | PRINCIPAL INVESTIGATOR (Furnish SSAN if U.S. Academic Institution) |                                      |                            |                          |
| NAME: STOECKLEIN, H.G., RADM, MC, USN   |                    |                               |                | NAME: SARKISIAN, J.S., LT, MC, USN*                                |                                      |                            |                          |
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|   |                    |                               |                | NAME:  |                                      |                            |                          |
| 22. KEY WORDS (Precede FACH with Security Classification Code)  |                    |                               |                |  |                                      |                            |                          |
| (U) Ankle fracture (U) Survey (U) Disability  |                    |                               |                |  |                                      |                            |                          |
| 23. TECHNICAL OBJECTIVE, 24. APPROACH, 25. PROGRESS (Furnish individual paragraphs identified by number. Precede text of each with Security Classification Code)  |                    |                               |                |  |                                      |                            |                          |
| 23.(U) This study is designed to evaluate the functional radiographic results of treatment of ankle fractures at Naval Hospital, San Diego.   |                    |                               |                |  |                                      |                            |                          |
| 24.(U) Records and x-rays of all ankle fractures treated between 1966 and 1972 will be reviewed. Whenever possible personal examination of patients for followup evaluation will be performed. A new method of x-ray evaluation will be proposed and a rationale for anatomic restoration of the ankle mortise will be proposed, based on the known biomechanics of the joint.  |                    |                               |                |  |                                      |                            |                          |
| 25.(U) Two hundred and eighty-four ankle fractures were treated at Naval Hospital, San Diego, in Fiscal Year 1972. For various reasons, 118 of them were excluded from the study, giving 166 fractures which were evaluated with a followup of six months or more and 106 for a year or more. The 106 fractures followed up one year or more is the basis for the report. Our studies indicate that the anatomic reduction of the ankle fractures gives the best results based upon a symptom of pain at one year and using the talo-crural angle is one of the criteria for adequacy of reduction. The pronation external rotation injuries that required open reduction gave surprisingly poor results. A paper was presented by Chief of Orthopedic Surgery while visiting professor at Naval Hospital, Portsmouth.* |                    |                               |                |  |                                      |                            |                          |

\* Available to contractors upon originator's approval.

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