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USAARU REPORT NO. 67-9

AN IMPROVISED C-RATION SLEEVE LITTER

By

V. V. Villa, SFC
and
W. P. Schane, LTC, MC

MAY 1967

U. S. ARMY AEROMEDICAL RESEARCH UNIT
Fort Rucker, Alabama

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ABSTRACT

A field expedient litter improvised from discarded C-ration sleeves and two sturdy poles has been laboratory tested and found to be worthy of field use.

APPROVED: Robert W. Bailey

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AN IMPROVISED C-RATION SLEEVE LITTER

A field expedient litter improvised from discarded C-ration sleeves and two sturdy poles has been laboratory tested and found to be worthy of field use.

TEST PROCEDURES

1. Static testing: A single C-ration sleeve, just as it was taken from the carton, was slipped onto two wooden poles. These poles were then placed on supports so that the C-ration carton was stretched taut, and was elevated above the ground. Fifty pound lead weights were then placed on the C-ration sleeve one at a time until sleeve failure occurred.

Similar tests were performed upon:

a. A thoroughly water soaked C-ration sleeve and

b. A C-ration sleeve which had been alternately water-soaked and dried a total of seven times over a 30 day period.

2. Dynamic testing: A mechanical litter carrier was developed to stimulate the movement of a weight upon a litter. Vertical excursion was 2 inches, frequency was 80 complete excursions per minute. Excursion and frequency were determined from motion study analysis of actual litter carriers carrying subjects over smooth turf. A C-ration sleeve was slipped over rigid supports which stretched the sleeves taut, and 206 pounds of lead weight were placed upon the sleeve. The mechanical litter carrier ran continuously 8 hours each day, 5 days a week.

During the 16 hours each day when the shaking platform was not in motion, the two dry cartons, with the weights in place, were left on the frame. The wet carton was taken from the frame each evening and reimmersed in water for the 16 hours to keep it thoroughly wetted.

An unmanipulated sleeve, a thoroughly water soaked sleeve and a sleeve alternately water soaked and dried seven times over a one month period were tested in this manner.

RESULTS

1. Static test:

Table 1

Results of Static Test

	Wt. in lbs. on sleeve at time of failure	Cause of Sleeve Failure
Dry Sleeve	1510	Cardboard Tore Slowly
Wet Sleeve	850	Cardboard Tore Slowly
Alternately Wet & Dry Sleeve	850	Staples pulled out

2. Dynamic test: Neither the dry sleeve, nor the alternately wetted and dried sleeve has failed as yet, although each has been dynamically tested for over 80 hours. This would be equivalent to carrying 206 pounds a total of over 91 miles on each sleeve tested.

The soaked sleeve failed by tearing after 23 hours 50 minutes of test, equivalent to carrying 206 pounds over 27 miles.

DISCUSSION

On the basis of the laboratory testing, it can be stated that C-ration sleeves, wet or dry, have sufficient static and dynamic strength to serve as a litter for human patients (see Figure 1). Six C-ration sleeves slipped over two sturdy poles and placed in continuity will produce a litter 75 inches long and 19 inches wide, compared to a standard canvas litter, which is 72 inches long and 21 3/4 inches wide (see Figure 2). It is recommended that when 6 sleeves are used the sleeves each be pierced, and each tied to its adjacent sleeves to maintain contiguity. The patient's boot laces may be used to tie the sleeves together. A litter made in this fashion will provide effective support for a patient with an adequately immobilized long bone fracture and with proper padding is rigid enough to transport a patient with a broken back (see Figure 3).

Figure 1

Figure 2

Figure 3

When the litter is in this configuration, the sleeves could theoretically support 9000 pounds of evenly distributed static weight.

If the patient to be transported does not require full body support, a man can be comfortably carried supine with as few as 3 C-ration sleeves: one placed under the head and shoulders; one placed under the lumbar spine, sacrum and buttocks; and one placed under the thighs, knees, and calves (see Figure 4).

Longitudinal litter poles can be made from tree saplings, bamboo stalks, tent poles or other strong slender objects locally available.

SUMMARY

1. A field expedient litter is described made from 2 stout poles and 3 to 6 C-ration sleeves.

2. Laboratory tests show the sleeves to be statically and dynamically strong enough to support the weight of a patient for long carries.

3. When 6 sleeves are used, a rigid litter 75 inches long and 19 inches wide is produced which, with proper padding, can be used to transport patients with long bone or spinal fractures.

4. Recommendations are made for the preparation of such a litter in the field situation.

Figure 4

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13. ABSTRACT

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