



are typically moved ^{in contrast} to the
means of 1 to here.

A number of ^{potential} sources of error ^{are present}
as a result ^{physiological & anatomical}
are present.

Add to end of METHODOLOGY

Physiological and anatomical factors produce
a series of potential errors. When one
moves from ~~the~~ horizontal to vertical
^{the effect of gravity cause} several hundred ml of blood ^{to be} shifted
into the legs. ~~and~~ Changes in
relaxation or contraction of muscles and
in position of ^{leg} body segments will
produce volume changes as will the
shifts in ^{tissue} ~~muscle~~ volume as one goes
from lying to standing. There will be changes
^{in tissue shape & volumes} ~~in~~ ⁱⁿanced by going from 1 g. to weightlessness.
Insofar as possible, these were examined
or controlled.

Results -

The measurements are shown in tables I-IV. Mean volumes and above & below knee distributions are shown prior to flight in table I. The measurements were all made during normal activities during the day and did not include immediate post sleep measurements, since these do not reflect the usual ambulatory state. They were made over a period of 3 weeks preflight including L-0 L-1 & L-2 except for 57-57S-7 whose measurements ended at 2-4.

The total volumes reflected the individuals size and weights. ^(Total leg volume $\bar{x}$ = 8865.7 ml, range 7967.1 to 10,659.5 ml) Regional distributions above & below knee ^{(Knee (AK) 64.4% AK / 35.6% BK) were relatively constant among the members. The differences observed can be accounted for and are reflected in individual position of the limits} anthropometric differences, and also in the cut off of the upper cutoff of the thigh measurements which could not be anatomically controlled. [statement re. prev. meas.]

The mean inflight volume changes are given in table II. (c their distribution). Mean Volume changes ranged was ~~total~~ 1.17 litre which represented a mean change of 13% of ~~leg~~ total leg volume. The percentage shifted was reasonably constant c the largest change in the largest, heaviest individual. Origin of the shift had not p is slightly shifted skewed

1.03
2.2

1082
90.9
1.06
85.7 (L)
10.7
20.4
21.4
24
25%

(69.2% AK / 30.8% BK)

toward the upper leg. The two earliest recordings, ^(MET of 14 and 13 hours) were still too late to document the rapid changes in volume. ^{From the graph of the time course of the inflight data it appears} Fig. —. ^{can be hypothesized} It appears that a small downward trend ~~continues~~.

The immediate post landing data shown in table III was gathered within 1 1/2 hrs. post flight ^{from} for the four STS-8 crewmen.

The means were compared to inflight means (III, 4) and represent were a much smaller change than that ^{found} from pre to inflight:

The mean ^{total volume shift from inflight was} ~~0.64 L~~ with a range of 0.50 to

0.84 L which is a mean replacement of 54. % of the loss. The distribution

- 0-20 - 89.9
- 20-40 - 88.9
- 40-60 - 88.0
- 60-80 - 87.7
- 80-100 - 88.2
- 100-120 - 88.6

^(III, 6) was again skewed toward the upper leg (71.8% AK / 28.2% BK).

Table IV was ^{derived} not made from measurements ^{L+0} made from ~~L+1~~ L+0.

to up to L + 7 1/2 days. This

The additional volume change was .29 L but one subject ~~was~~ measured at 81 days whose only ~~pre~~ flight measurement was 81 day later showed this. Without this ^{point} single the increase was only 118 ml. L over the first week i.e. there was only and an 8.7% increase.