



DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERY  
WASHINGTON, D.C. 20372

IN REPLY REFER TO  
BUMEDINST 3710.1  
BUMED-51A  
11 July 1977

BUMED INSTRUCTION 3710.1

From: Chief, Bureau of Medicine and Surgery

Subj: Anthropometric Compatibility Assignment Program

Ref: (a) OPNAVINST 3710.36

Encl: (1) Personal Anthropometric Code **Measurement Procedures**  
(2) Personal Anthropometric Code

1. Purpose. By reference (a), the Bureau of Medicine and Surgery is charged with the responsibility for obtaining, recording, and providing accurate anthropometric data to insure physical compatibility of flight crew personnel with their aircraft.

2. Background. A system of anthropometric measurements and coding has been developed to identify individual compatibility with current crew station dimensions. This procedure will permit the future assignment of aircrew personnel with assurance that the potential for loss due to anthropometric incompatibility has been effectively reduced.

3. Action

a. BUMED (Code 51) is tasked with program implementation, overall management, and an annual review of the medical aspect of this program, and for coordination with the Chief of Naval Operations, Commandant of the Marine Corps, the Bureau of Naval Personnel, and Naval Air Systems Command.

b. The Commanding Officer of the Naval Aerospace Medical Institute (NAVAEROSPMEDINST) shall:

(1) Insure that all aviation candidates are measured as set forth in enclosure (1) during the initial physical examination. These measurements shall then be transcribed into a four digit code as per enclosure (2). This information shall be recorded on BUMED 6410/9, Anthropometric Data Record, in duplicate. One copy will be forwarded to the Naval Aerospace Medical Research Laboratory (NAVAEROMEDRESCHLAB).

(2) The Navy Very Important Prospects (NAVIPS) will be measured, coded, and recorded in duplicate on BUMED 6410/9, on initial physical examination at NAVAEROSPMEDINST. When the NAVIP checks in at NAVAEROSPMEDINST prior to beginning aviation training, NAVAEROSPMEDINST will forward one copy of the BUMED 6410/9 to NAVAEROMEDRESCHLAB and insert the other copy in the Health Record.



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c. The Commanding Officer, Naval Aerospace Medical Research Laboratory shall:

(1) Insure that the data provided on each duplicate BUMED 6410/9 is incorporated into the Human Factors Data Bank.

(2) Provide a weekly report for the naval aviation schools command of all aviation candidates examined which shall include name, social security number, and the four digit anthropometric code.

(3) Provide biweekly reports to Marine Aviation Training Support Group for Marine Corps personnel.

d. All anthropometric measurements recorded prior to 1 January 1977 are considered invalid for the purpose of this instruction.

e. Fleet aviation personnel referred to a flight surgeon as having potential cockpit anthropometric incompatibilities shall be referred to the nearest aviation physiology training unit (APTU) for measurement. If such measurement reveals an incompatibility, this information shall be recorded in the Health Record, using NAVMED 6410/9, and then be provided to the identified personnel and the commanding officer. If cockpit reassignment is sought, official command correspondence shall be initiated to Chief of Naval Personnel or the Commandant of the Marine Corps via Chief, Bureau of Medicine and Surgery and the appropriate chain of command.

4. Form. NAVMED 6410/9 (Rev. 4-77), Anthropometric Data Record, will be available from the Navy supply system (Cognizance Symbol "11") in January, 1978, under stock number 0105-LF-206-4145. Continued use of the 1-72 edition is authorized pending availability of the 4-77 revision.

  
W. P. ARENTZEN

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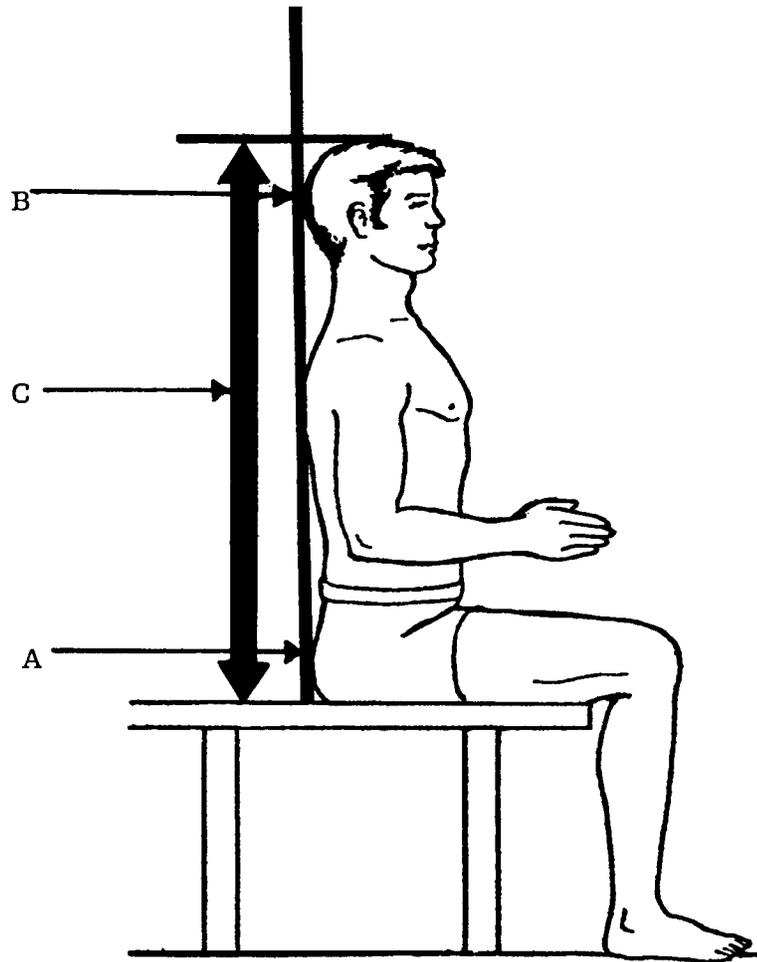
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Personal Anthropometric Code Measurement Procedures

The sitting height (fig. 1), functional reach (fig. 2), buttock-knee length (fig. 3), and buttock-leg length (fig. 4) anthropometric dimensions will be coded on NAVMED 6410/9. These four dimensions will be coded relative to the ranges specified in enclosure (2). Extreme care must be taken to avoid error in taking these measurements since the anthropometric codes will determine which aircraft, if any, the subject will be restricted from flying as a result of his particular dimensions. All sitting measurements are taken with the person sitting erect, looking straight ahead, with the head, shoulders, back, and buttocks firmly against the seat back and with the chest at full inspiration. When measuring subjects with the integrated anthropometric chair, special care will be taken to insure accuracy for the four coded dimensions as specified below:

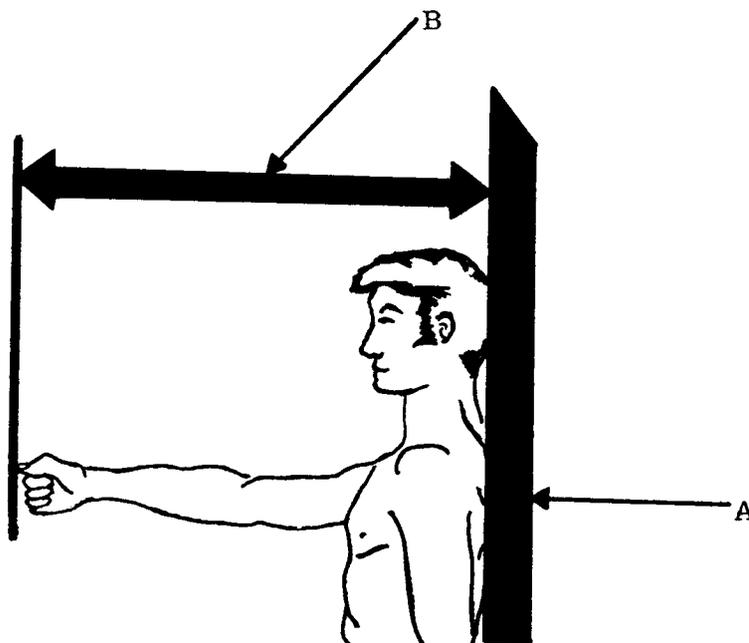
Figure 1. Sitting Height



Enclosure (1)

a. Sitting Height (fig. 1). With subject sitting, ensure that the lumbar-sacral area (A) and back of head (B) are touching the chair-back surface. Posture should be erect, not slouching. Measure vertical distance from seat surface to top of head (C).

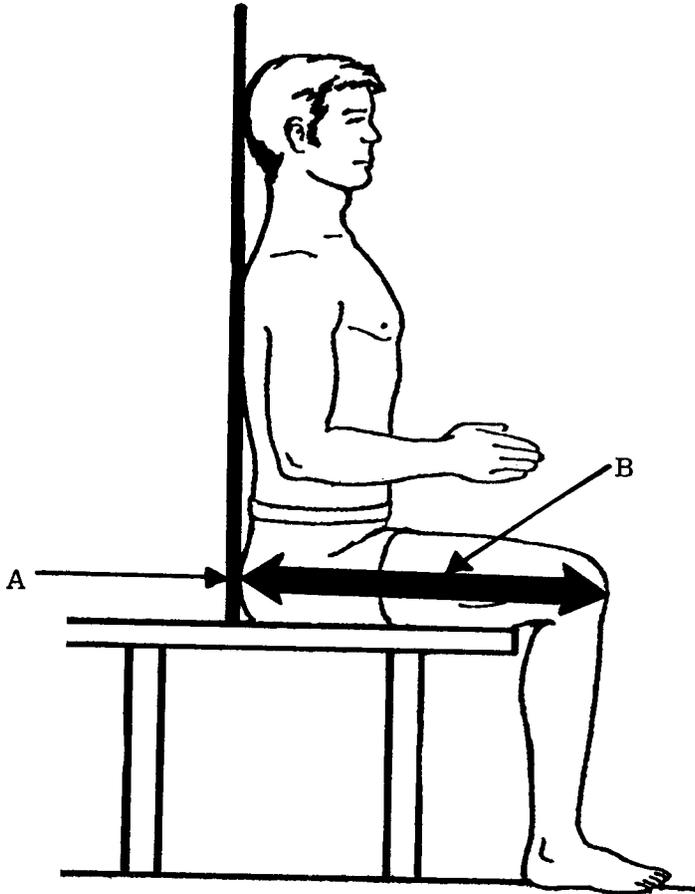
Figure 2. Functional Reach



b. Functional Reach (fig 2). With subject sitting, ensure that both shoulder blades (scapulae) are touching vertical chair surface (A). Adjust aft measure source device as near as possible to subject's shoulder on arm being measured. Have subject form fist with thumb extended forward along measuring device, extend arm horizontally forward while maintaining scapulae-to-chair surface contact. Measure horizontal distance from thumb-tip to vertical back surface (B).

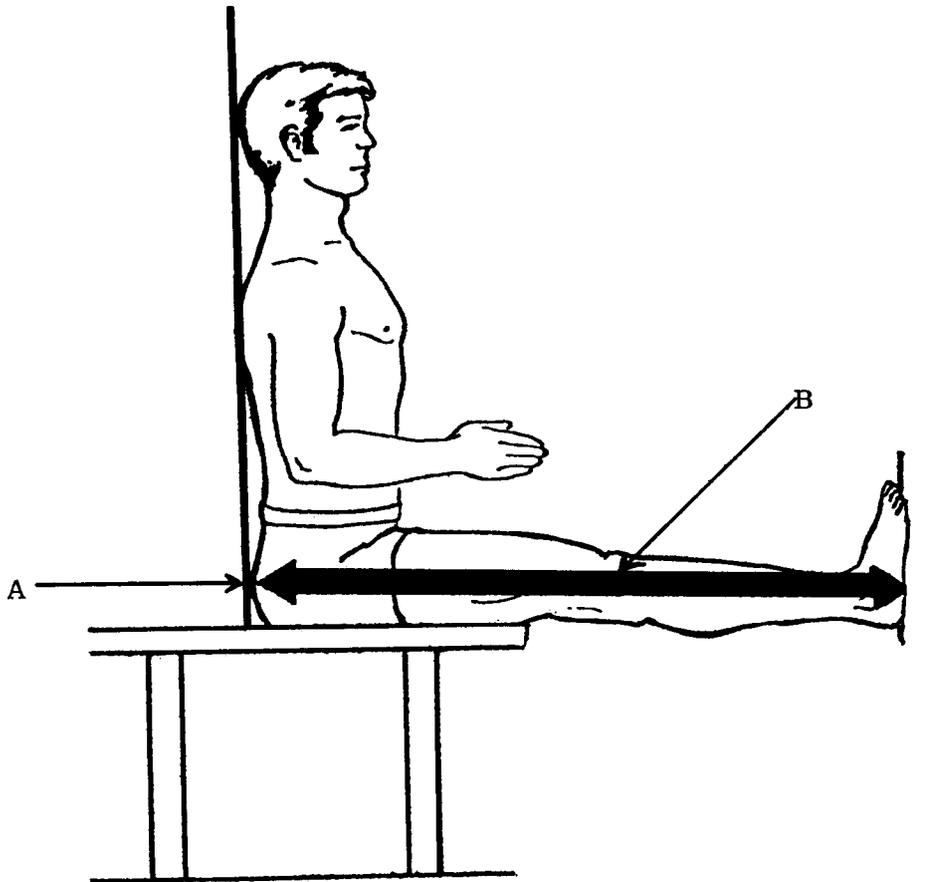
Enclosure (1)

Figure 3. Buttock-Knee Length



c. Buttock-Knee Length (fig 3). With subject seated, ensure that subject's lumbar/sacral area is touching vertical seat-back surface as near to seat as possible (A). Measure horizontal distance from seat-back vertical surface to forward edge of knee (upper leg) with foreleg in vertical position (B).

Figure 4. Buttock-Leg Length



d. Buttock-Leg Length (fig 4). With subject seated, ensure that subject's lumbar/sacral area is touching vertical seat-back surface as near to seat as possible (A). Measure distance from end of horizontally extended leg (heel surface) to seat-back vertical surface (B).

PERSONAL ANTHROPOMETRIC CODE (in inches)

(1) SITTING HEIGHT		(2) FUNCTIONAL REACH		(3) BUTTOCK-KNEE		(4) LEG LENGTH	
Code	Interval	Code	Interval	Code	Interval	Code	Interval
9	> 40.0	9	< 27.9	9	> 28.0	9	> 49.0
8	39.5-39.9	8	28.0-28.4	8	27.0-28.0	8	48.0-48.9
7	39.0-39.4	7	28.5-28.9	7	26.5-26.9	7	47.0-47.9
6	38.5-38.9	6	29.0-29.4	6	26.0-26.4	6	46.0-46.9
5	38.0-38.4	5	29.5-30.4	5	25.5-25.9	5	45.0-45.9
4	35.0-37.9	4	30.5-30.9	4	25.0-25.4	4	43.0-44.9
3	34.0-34.9	3	31.0-31.4	3	24.0-24.9	3	40.0-42.9
2	33.0-33.9	2	31.5-32.4	2	23.0-23.9	2	39.0-39.9
1	32.5-32.9	1	32.5-33.9	1	22.0-22.9	1	38.0-38.9
0	< 32.4	0	> 34.0	0	< 21.0	0	< 37.0

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Enclosure (2)