

Marine Corps Body Composition Program: The Flawed Measurement System

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The Flawed Measurement System

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The Marine Corps' Body Composition Program (BCP) is designed to shift focus in the weight control program from height/weight to body fat measurements in order to eliminate program inconsistencies due to local interpretation/implementation, while providing a more appropriate focus on health and fitness and reducing the time and manpower associated with the administration and operation of the weight control program.¹ The program not only eliminates an unrealistic "no tolerance" height and weight standard, it allows Marines with different body compositions to be held to the same Marine Corps standards as their peers regardless of their shapes and sizes. Unfortunately, however, the tape measurement system used by the BCP to determine a Marine's body fat percentage is the least accurate of all methods currently being utilized in the medical world. It's a flaw that is easily correctable and can be implemented quickly just as the revised physical fitness testing and body composition policy was implemented in 2002.²

Current Measurement System

According to MCO 6100.12 (Marine Corps Physical Fitness Test and Body Composition Program), the tape measurement system used is DoD directed for various reasons including the focus on

¹ ALMAR 326/97. Change 3 to MCO 6100.10B, Weight Control and Military Appearance.

² MARADMIN 313/02. Coordinating instructions for implementation of changes to Physical Fitness Testing and Body Composition Program Policy.

the abdominal circumference and the application of the exam with minimal error. According to the BCP order,

*"Body fat will be estimated using the circumference-based method with one set of measurements for each gender (Males: height, neck circumference, and abdominal circumference at the navel. Females: height, neck circumference, waist circumference at the thinnest portion of the abdomen, and hips). No substitute methods of assessment are permitted. This DoD directed method of body fat estimation has been carefully evaluated for applicability to service members and represents the best approach that can be applied with minimal error (+/- 3 to 4%). This method is also valid because of the emphasis on abdominal circumference, the site of human body fat deposition which is most strongly associated with health risks, and which corresponds to other military goals including appropriate appearance and healthy exercise habits."*³

As stated in the above excerpt, this "circumference-based method" has been "carefully evaluated" and can be "applied with minimal error (+/- 3 to 4%)."

Considering that a 1% error from 18% to 19% can mean the difference between receiving an adverse Fitness Report, it is hardly "minimal error."

According to an article by Joe "Yu Yevon" King, a fitness expert and writer for ABC Bodybuilding, an error of 3% in a body fat evaluation is extreme and methods that have this margin of error should not be used when accurate measurements are necessary. He also claims that height and weight tables should not be used as a gauge for body fat estimation.⁴

As stated earlier, when a career is on the line, accuracy is necessary.

Having had numerous conversations regarding the BCP with weight control officers in various units, it is understood that part of the reason the current measurement system is used is

³ MCO 6100.12. Marine Corps Physical Fitness Test and Body Composition Program Manual

⁴ Joe King. The Ultimate Body Fat Testing Guide by Yu Yevon.

because it is easy to implement and requires minimal to no training to conduct the body fat evaluation. Individuals tasked with conducting body fat evaluations require that weight control officers need to have only a solid comprehension of MCO 6100.12 and a flexible measuring tape for the actual evaluation. This allows commanders in every unit the ability to appoint internal weight control officers at anytime.

The instructions and procedures outlined in the body fat evaluation for males,

"(a) Measure the neck circumference by placing the edge of the tape measure flush with the bottom of the larynx and perpendicular to the long axis of the neck. The Marine should look straight ahead during the measurement, with shoulders down (not hunched). For neck measurements in excess of the whole inch, round the neck measurement up to the nearest 1/2-inch and record (e.g., round up 16 1/4 inches to 16 1/2 inches). (b) Measure abdominal circumference against the skin at the navel, level and parallel to the deck. Arms are at the sides. Take measurement at the end of the Marine's normal, relaxed exhalation. Round the abdominal measurement down to the nearest 1/2-inch and record (e.g., round down 34 3/4 to 34 1/2 inches). (c) Determine percent body fat by subtracting the neck from the abdominal measurement and comparing this value against the height measurement, (e.g., abdominal - neck = circumference value). Refer to the chart "Percent Body Fat Estimation for Males" in section II of appendix I."

In order to determine a body fat percentage on the chart, the Marine's height is matched up with his circumference value, which gives his/her body fat percentage. If, upon completion of the body fat evaluation, the Marine has exceeded the height/weight standards and is over the maximum allowable body fat (18% for males and 26% female), he/she will be assigned to the unit's weight control program. Unit Commanders have the authority to allow male Marines a body fat percentage of twenty-two if they

score a 1st Class Physical Fitness Test (PFT), but it is not mandatory to give any Marine this leniency.

Once a Marine is placed on weight control, it is annotated in his record book by way of a Page 11 entry. For Sergeants and above, placement on weight control is noted on their Fitness Report with mandatory adverse remarks. At promotion time, the review of an adverse Fitness Report will most likely result in non-selection/promotion. Considering that placement on weight control can have such an adverse impact on a Marines career, it is difficult to consider that one percent difference in body fat estimation discussed earlier is "minimal error."

Recommendation

Forms of body fat testing range from inaccurate height/weight tables to the highly accurate method of Hydrostatic Weighing (Hydrodensitometry, Underwater Weighing, Dunk tank). The cost of these methods range from zero dollars to \$100 per test for Hydrostatic Weighing. Because the Marine Corps and the DoD do not have the budget for Hydrostatic Weighing, something in between that encompasses the needs/requirements of the military at affordable price and implementation is needed.

In Joe King's article, he evaluates and researches thirteen different methods of testing body fat, and discusses the logistics and prices involved with each. Out of the methods he evaluates, he identifies the Calipers (skin fold) Method as being the "happy medium" between accuracy and pricing. The Calipers Method measures skin folds to calculate the amount of subcutaneous fat a person has. This number is then entered into

an equation to predict the body density (Bd) and then body fat percentage. The calipers are not the most accurate method but it is considerably more accurate than the tape measure and cheaper than most other methods. In fact, bodybuilders use a seven to nine point skin fold measurement weekly during their training to monitor body fat percentage.

Implementation of the Caliper Method throughout the Marine Corps would be simple. Marine Corps Training and Education Command (TECOM) produced a video that outlined procedures for implementing the BCP program in 2002. The same can be done with the Caliper Measurement System. It can be announced through an ALMAR and MARADMIN as a change to MCO 6100.12 and include coordinating instructions on implementation. There are many companies that offer calipers ranging in price from \$19 to well over \$500 dollars. For example, the *Accu-Measure Fitness 3000 Body Fat Caliper* is sold for \$19.95 and recommended and endorsed by "Body-For-Life" and the World Natural Bodybuilding Federation. The caliper comes with detailed instructions, as well as men and women's body fat charts. With proper measuring, it has an accuracy level within 1.1% of Hydrostatic Weighing. Regardless of which caliper system the Marine Corps was to pick, the important aspect will be standardization throughout the Marine Corps. Units should not have the option to purchase calipers of higher/lesser quality based on their budget.

Conclusion

The Marine Corps' adoption of the BCP was a leap in its growth with the advancing times and technology. The BCP

implemented a system that provides options to Marines that do not have average male or female body types. By changing the current tape measurement system to the Caliper Measurement System, the BCP will have a much more accurate body fat estimation, a standardized system throughout the Marine Corps, and will minimize human error when a Marine's career could be on the line.

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