

GA-3 Disaster Medical Assistance Team

Physical Fitness Guide

PURPOSE:

The purpose of this Physical Fitness Guide is to provide physical fitness training information to the members of the GA-3 Disaster Medical Assistance Team so they can be better prepared physically for deployments and other Team activities.

OBJECTIVES:

1. Review Body Mass Index
2. Review Body Fat Percentage
3. Review Physical Training
4. Review Target Heart Rate

REFERENCES:

1. Tom Venuto, certified personal trainer, certified strength & conditioning specialist.
2. www.thatsfit.com
3. www.changingshape.com
4. www.healthchecksyste.ms.com
5. www.americanheart.org

INTRODUCTION:

To become physically fit you need to understand how your body reacts to physical training and what steps to take to make the changes you want to make. Burning fat, building endurance, gaining strength, building muscle mass, and improving your cardiovascular system all require different types of training. By understanding the different types of physical training, it will assist you in reaching your goal.

Body Mass Index (BMI)

Is a measurement that determines if you're at an appropriate weight for your height by estimating your body fat. Body Mass Index is generally a reliable approximation of body fat but it doesn't always tell the whole picture. Body Mass Index doesn't differentiate between body fat and lean muscle mass. Body Mass Index might be a poor indicator of body fat in athletes, people who have a muscular build and those who are heavily engaged in strength training because their dense muscle mass may classify them as

overweight when they are not. It also might underestimate body fat in older individuals and people who have lost muscle mass.

To determine Body Mass Index:

(weight in pounds) divided by (height in inches)² multiplied by 703

example: A person 5'7" weighing 185 pounds has a BMI of 29

(185) divided by (67)² multiplied by 703

(185) divided by (4489) multiplied by 703

equals: 28.971895 or 29

Body Mass Index Chart

< than 18.5 underweight

18.5 – 24.9 normal

25.0 – 29.9 overweight

> than 30.0 obese

If your Body Mass Index is 25 or above and you're not an athlete or you don't have a muscular build, you could be a risk for numerous health conditions including heart disease and type 2 diabetes.

Body Fat Percentage

Body Fat Percentage is simply the percentage of fat your body contains. A certain amount of fat is essential to bodily functions. Fat regulates body temperature, cushions and insulates organs and tissues and is the main form of the body's energy storage. Knowing your body fat percentage can also help you determine if your weight loss goals are realistic. Weight loss doesn't always mean fat loss.

Example: If a man weights 185 pounds and has a body fat of 21%

He has 38.85 pounds of fat and 146.15 pounds of lean body mass.

He can only lose 34.85 pounds of fat to maintain 4% fat and lean body mass.

Body Fat Percentage Chart

Classification	Woman %	Men %
Essential Fat	10% - 12%	2% - 4%
Athletes	14% - 20%	6% - 13%
Fitness	21% - 24%	14% - 17%
Acceptable	25% - 31%	18% - 25%
Obese	32% - plus	25% - plus

So before you decide that you need to "lose weight" remember to consider that "weight" consists of both lean body mass and body fat. Keep your weight loss goals realistic and remember keep the calorie-burning muscle and lose only the fat.

Physical Training

Powerlifters often don't look as strong as they are and bodybuilders often look stronger than they really are. The difference can be attributed to the repetition ranges that comprise the majority of their training programs.

When you train with reps under 6 it makes you stronger, but they don't necessarily make you bigger because the strength gains come from adaptations in the nervous system – the muscle fibers and other muscle cell structures do not hypertrophy (enlarge). This explains why certain athletes, powerlifters and Olympic lifters can be strong but they don't look as strong as they are.

When you train with medium reps (6-12) the adaptations are more metabolic and cellular and only moderately neurological. This is why 6-12 reps is the range most often recommended for bodybuilding and hypertrophy. You get bigger and stronger in this rep range, but your strength gains are not maximal. This explains why some bodybuilders look stronger than they are.

When you train with higher reps (13-20+) the adaptations are mostly metabolic and cellular. This rep range produces local muscular endurance, a small degree of hypertrophy in certain cellular components such as the mitochondria (where energy production takes place) and the capillaries, and very little strength.

	# of reps	Primary Objective
Heavy	1-6	Strength
Medium	7-12	Muscle Size (Bodybuilding)
Light	13+	Fitness, Endurance

The numbers in the above table are general ranges. They are based on going to fatigue or failure (i.e. for an 8 rep set, the weight used results in the physical inability to perform a 9th rep due to muscle exhaustion).

Target Heart Rate

Target heart rates let you measure your initial fitness level and monitor your progress in a fitness program. This approach requires measuring your pulse periodically as you exercise and staying within 50 to 85 percent of your maximum heart rate. This is called your target heart rate.

A few high blood pressure medications lower the maximum heart rate and the target zone rate. If you're taking such medicine, call your physician to find out if you need to use a lower target heart rate.

When starting an exercise program, aim at the lowest part of your target zone (50%) during the first few weeks. Gradually build up to the higher part of your target zone (75%).

To determine Target Heart Rate:
Maximum heart rate is about 220 minus your age.

Age	Target Heart Rate (50% to 85%)	Maximum Heart Rate (100%)
20 yrs	100-170	200
25 yrs	98-166	195
30 yrs	95-162	190
35 yrs	93-157	185
40 yrs	90-153	180
45 yrs	88-149	175
50 yrs	85-145	170
55 yrs	83-140	165
60 yrs	80-136	160
65 yrs	78-132	155
70 yrs	75-128	150
75 yrs	73-123	145
80 yrs	70-119	140

Target Heart Rate 1

General Health: A great deal of research indicates that being active at 50 to 60 % of your maximum heart rate, consistently and for a total of 30 minutes on most days, reduces the risk of developing many chronic diseases. Low intensity activities like walking, gardening, household chores or easy cycling will achieve this.

Target Heart Rate 2

Weight Management: If your goal is to reduce body fat and you have been relatively inactive, you will need to train at a level of 60 to 70 % of your maximum heart rate. This is still within your comfort zone and allows you to exercise at a steady pace for a long enough time to burn off a substantial number of calories.

Target Heart Rate 3

Aerobic Conditioning / Weight Management: If your goal is to improve your cardiovascular conditioning for better stamina and endurance, you should train within a zone of 70 to 80 % of your maximum heart rate. This is also a good zone for fat burning if you are already fairly fit.

Target Heart Rate 4

Advance Conditioning: If you are in top shape and training for a sporting event like a 10km race, triathlon or tennis, you might need to include some workouts that are 80 % and above your maximum heart rate. This level of training is both physically and mentally demanding so it is not something you would do on a daily basis.

CLOSING

Having a better understanding and awareness of physical fitness will allow you to perform activities within your ability and limitations. By improving your physical fitness

you can improve your overall health and prevent injuries during strenuous activities. Physical fitness is ongoing, once you reach your goal in must be maintained.