

Test Protocol

Skin fold Measurement

- **Aim:** to estimate body fat level by the measurement of skin fold thickness
- **Equipment:** skin fold calipers, tape measure, marker pen, recording sheets.
- **Procedure:** Skin fold measurement can use from 3 to 9 different standard anatomical sites around the body. The tester pinches the skin at the appropriate site to raise a double layer of skin and the underlying adipose tissue, but not the muscle. The calipers are then applied 1 cm below and at right angles to the pinch, and a reading in millimeters (mm) taken two seconds later. The mean of two measurements should be taken. If the two measurements differ greatly, a third should then be done, then the median value taken.
- **Results :** It is usually not appropriate to convert skin fold measures to percentage body fat (%BF). It is best to use the sum of several sites to monitor and compare body fat measures. In order to satisfy those who want to calculate a percentage body fat measure, there is a sample of equations for calculating this [here](#)

$$\text{body fat percentage (BF\%)} = (\text{fat weight} \div \text{total body weight}) \times 100$$

- Below is a table of general guidelines (based on personal experience) for using total sum (in millimeters) of the seven main skin fold sites (tricep, bicep, subs cap, supraspinale, abdominal, thigh, calf). There are also examples of some actual [athlete results](#).

		excellent	good	average	below average	poor
Normal	Male	60-80	81-90	91-110	111-150	150+
	Female	70-90	91-100	101-120	121-150	150+
Athletic	Male	40-60	61-80	81-100	101-130	130+
	Female	50-70	71-85	86-110	111-130	130+

Body Mass Index (BMI)

BMI stands for Body Mass Index. It is a measure of body composition. BMI is calculated by taking a person's weight and dividing by their height squared. For instance, if your height is 1.82 meters, the divisor of the calculation will be $(1.82 * 1.82) = 3.3124$. If your weight is 70.5 kilograms, then your BMI is 21.3 $(70.5 / 3.3124)$

- **equipment required:** scales and stadiometer as for weight and height.
- **procedure:** BMI is calculated from body mass (M) and height (H). $BMI = M / (H \times H)$, where M = body mass in kilograms and H = height in meters. The higher the score usually indicating higher levels of body fat.
- **scoring:** Use the table below to determine your BMI rating. The table shows the World Health Organization BMI classification system. The rating scale is the same for males and females. You can also use the reverse lookup [BMI table](#) for determining your ideal weight based on height.

classification	BMI (kg/m ²)	sub-classification	BMI (kg/m ²)	
underweight	< 18.50	Severe thinness	< 16.00	
		Moderate thinness	16.00 - 16.99	
		Mild thinness	17.00 - 18.49	
normal range	18.5 - 24.99	normal	18.5 - 24.99	
overweight	≥ 25.00	pre-obese	25.00 - 29.99	
		Obese (≥ 30.00)	obese class I	30.00 - 34.99
			obese class II	35.00 - 39.99
		obese class II	≥ 40.00	

Sit Up Test at Home

[Push Up](#) | [Sit Up](#) | [Squat](#) | [Step](#) | [Vertical Jump](#) | [Sit & Reach](#)

Abdominal muscle strength and endurance is important for core stability and back support. This sit up test measures the strength and endurance of the abdominals and hip-flexor muscles. How many sit-ups can you do in 1 minute? Count how many you can do in one minute and then check the chart below for your rating.

Starting Position: Lie on a carpeted or cushioned floor with your knees bent at approximately right angles, with feet flat on the ground. Your hands should be resting on your thighs.

Technique: Squeeze your stomach, push your back flat and raise high enough for your hands to slide along your thighs to touch the tops of your knees. Don't pull with your neck or head and keep your lower back on the floor. Then return to the starting position.

1 Minute Sit up Test (Men)

Age	18-25	26-35	36-45	46-55	56-65	65+
Excellent	>49	>45	>41	>35	>31	>28
Good	44-49	40-45	35-41	29-35	25-31	22-28
Above average	39-43	35-39	30-34	25-28	21-24	19-21
Average	35-38	31-34	27-29	22-24	17-20	15-18
Below Average	31-34	29-30	23-26	18-21	13-16	11-14
Poor	25-30	22-28	17-22	13-17	9-12	7-10
Very Poor	<25	<22	<17	<13	<9	<7

1 Minute Sit up Test (Women)

Age	18-25	26-35	36-45	46-55	56-65	65+
Excellent	>43	>39	>33	>27	>24	>23
Good	37-43	33-39	27-33	22-27	18-24	17-23
Above average	33-36	29-32	23-26	18-21	13-17	14-16
Average	29-32	25-28	19-22	14-17	10-12	11-13
Below Average	25-28	21-24	15-18	10-13	7-9	5-10
Poor	18-24	13-20	7-14	5-9	3-6	2-4
Very Poor	<18	<13	<7	<5	<3	<2

Cooper 12-minute Run Test Norms

The [Cooper 12 minute run](#) is a popular maximal running test of aerobic fitness. Here are some norms for you to compare results.

Cooper Test Results for Males (in meters)

Age	Excellent	Above Ave	Average	Below Ave	Poor
Male 20-29	> 2800m	2400 - 2800m	2200 - 2399m	1600 - 2199m	< 1600m
Males 30-39	> 2700m	2300 - 2700m	1900 - 2299m	1500 - 1999m	< 1500m
Males 40-49	> 2500m	2100 - 2500m	1700 - 2099m	1400 - 1699m	< 1400m
Males 50+	> 2400m	2000 - 2400m	1600 - 1999m	1300 - 1599m	< 1300m

Cooper Test Results for Females (in meters)

Age	Excellent	Above Ave	Average	Below Ave	Poor
Females 20-29	> 2700m	2200 - 2700m	1800 - 2199m	1500 - 1799m	< 1500m
Females 30-39	> 2500m	2000 - 2500m	1700 - 1999m	1400 - 1699m	< 1400m
Females 40-49	> 2300m	1900 - 2300m	1500 - 1899m	1200 - 1499m	< 1200m
Females 50+	> 2200m	1700 - 2200m	1400 - 1699m	1100 - 1399m	< 1100m

Cooper Test Results for Males (in yards)

Age	Excellent	Above Ave	Average	Below Ave	Poor
Male 20-29	> 3060	2620 - 3060	2410 - 2620	1750 - 2410	< 1750
Males 30-39	> 2950	2510 - 2950	2080 - 2510	1640 - 2080	< 1640
Males 40-49	> 2730	2300 - 2730	1860 - 2300	1530 - 1860	< 1530
Males 50+	> 2620	2190 - 2620	1750 - 2190	1420 - 1750	< 1420

Cooper Test Results for Females (in yards)

Age	Excellent	Above Ave	Average	Below Ave	Poor
Females 20-29	> 2950	2410 - 2950	1970 - 2410	1640 - 1970	< 1640
Females 30-39	> 2730	2190 - 2730	1860 - 2190	1530 - 1860	< 1530
Females 40-49	> 2520	2080 - 2520	1640 - 2080	1310 - 1640	< 1310
Females 50+	> 2410	1860 - 2410	1530 - 1860	1200 - 1530	< 1200

Sit and Reach Flexibility Test

The basic outline of the sit and reach test is described below. Some of the more popular variations are described in more detail above.

- **Equipment required:** [sit and reach box](#) (or alternatively a ruler can be used, and a step or box).
- **Procedure:** This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down. With the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at one-two seconds while the distance is recorded. Make sure there are no jerky movements. See also video demonstrations of the [Sit and Reach Test](#).

Scoring: The score is recorded to the nearest centimeter or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet. There is also the [modified sit and reach test](#) which adjusts the zero mark