

Importance of Physical Fitness in Human Development

Manoj Goel

Research Scholar, Physical Education, Department, M.D. University, Rohtak

Abstract— Today, there is a growing emphasis on looking good, feeling good and living longer. Increasingly, scientific evidence tells us that one of the keys to achieving these ideals is fitness and exercises. Getting moving is a challenge because today physical activity is less a part of our daily lives. There are fewer jobs that require physical exertion. We have become a mechanically mobile society, relying on machines rather than muscles to get around. In addition, we have become a nation of observers with more people (including children) spending their leisure time pursuing just that - leisure. Consequently, statistics show that obesity and over weight, the problems that come with high blood pressure, diabetes, cardiac arrest, etc. are on the rise. But statistics also show that preventive medicine pays off, so one should not wait until his/her doctor gives an ultimatum. Every one must take the initiative to get active now.

Keywords: Physical fitness, Human Development

I. INTRODUCTION

The decision to carry out a physical fitness program cannot be taken lightly. It requires a lifelong commitment of time and effort. Exercise must become one of those things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits of fitness and the risks of unfitness, you will not succeed. It has been realized that fitness adds not only years to one's life, but life to one's years.

II. COMPONENTS OF PHYSICAL FITNESS

Exercise scientists have identified nine elements/components that comprise the definition of fitness. The following lists each of the nine elements and an example of how they are used:-

Strength - the extent to which muscles can exert force by contracting against resistance (holding or restraining an object or person)

Power - the ability to exert maximum muscular contraction instantly in an explosive **burst** of movements (jumping or sprint starting)

Speed - the quickness of movement of limb, whether this is the leg of a runner or the arm of the shot putter.

Agility - the ability to perform a series of explosive power movements in rapid succession in opposing directions (ZigZag running or cutting movements)

Balance - the ability to control the body's position, either stationary (e.g. a handstand) **or while** moving (e.g. a gymnastics stunt)

Flexibility - the ability to achieve an extended range of motion without being impeded by **excess** tissue, i.e. fat or muscle (Executing a leg split)

Local Muscle Endurance - a single muscle's ability to perform sustained work (Rowing or **cycling**)

Cardiovascular Endurance - the heart's ability to deliver blood to working muscles and their ability to use it (Running long distance)

Strength Endurance - a muscle's ability to perform a maximum contracture time after time (Continuous

explosive rebounding through an entire basketball game)

Co-ordination - the ability to integrate the above listed components so that effective movements are achieved.

Physical fitness is the most easily understood by examining these components, or elements, or "parts." There is widespread agreement that following four elements are basic.

III. BENEFITS OF PHYSICAL FITNESS:

Improved Health

Increased efficiency of heart and lungs,

- * Reduced cholesterol levels
- * Increased muscle strength
- * Reduced blood pressure
- * Reduced risk of major illnesses such as diabetes and heart disease
- * Weight loss

Improved Sense of Well-Being

- * More Energy
- * Less stress
- * Improved quality of sleep
- * Improved ability to cope with stress
- * Increased mental sharpness

Improved Appearance

- * Weight loss
- * Toned muscles
- * Improved posture

Enhanced Social Life

- * Improved self-image
- * Increased opportunities to make new friends
- * Increased opportunities to share an activity with friends or family members

Increased Stamina

- * Increased productivity
- * Increased physical capabilities
- * Less frequent injuries
- * Improved immunity to minor illnesses

IV. STRENGTH

The common definition is *the ability to exert a force against a resistance*. The strength needed for a sprinter to explode from the blocks is different from the strength needed by a weight lifter to lift a 200kg barbell. This, therefore, implies that there are different types of strength.

Types of strength.

- Maximum strength - *the greatest force that is possible in a single maximum contraction*
- Explosive strength - *the ability to overcome a resistance with a fast contraction*
- Strength endurance - *the ability to express force many times over*

How do muscles get strong ?

A muscle will only strengthen, when it is worked beyond its normal operation, or it is overloaded, overload can be progressed by increasing the:

- Number of repetitions of an exercise
- Number of sets of the exercise Intensity - reduced recover time

Development of strength

- Maximum strength can be developed with
- Weight training

Explosive strength can be developed with:

- Conditioning exercises
- Medicine ball exercises
- Polymeric exercises
- Weight training

Strength endurance can be developed with:

- Circuit training
- Dumbbell exercise
- Weight training
- Hill running

V. SPEED

Speed is the quickness of movement of limb, whether this is the legs of a runner or the arm of the shot putter. Speed is an integral part of every sport and can be expressed as any one of, or combination of, the following

- Maximum speed
 - Explosive strength (power)
 - Speed endurance
 - Factors influencing Speed
- Speed is influenced by the athlete's mobility, special strength, strength endurance and technique.

Energy system for speed

The anaerobic alactic pathway supplies energy for absolute speed. The anaerobic (without oxygen alactic (without lactate) energy system is best challenged as an athlete approaches top speed between 30 and 60m while running at 95% to 100% of maximum. This speed component of anaerobic metabolism lasts approximately six seconds and should be trained when no muscle fatigue is present (usually after 24 to hours of rest)

Development of Speed

The technique of sprinting must be rehearsed at slow speeds and then transferred to run at maximum speed. The stimulation, excitation and correct firing order of the motor units, composed of a motor nerve (Neuron) and the group of muscles that it supplies, makes it possible for high frequency movements to occur. The whole process is not totally clear but the complex coordination and timing of the motor units and muscles most certainly must be rehearsed at high speeds to implant the correct patterns.

VI. MEASURING YOUR HEART RATE

Heart rate is widely accepted as a good method for measuring intensity during running, swimming, cycling and other aerobic activities. **Exercise that doesn't raise your heart rate to a certain level and keep it there for 20 minutes won't contribute significantly to cardiovascular fitness.**

The heart rate you should maintain is called your Target Heart Rate. There are several ways of arriving at this figure. One of the simplest is: Maximum Heart Rate (220 - age) X 70%. Thus, the target heart rate for a 40 year-old would be 126.

Some methods for finding out the target heart rate take individual differences into consideration. Here is one of them :—

1. Subtract age from 220 to find **Maximum Heart Rate.**
2. Subtract resting heart rate (see below) from maximum heart rate to determine **Heart Rate Reserve.**
3. Take 70% of heart rate reserve to determine **Heart Rate Raise.**
4. Add heart rate raise to resting heart rate to find **Target Heart Rate.**

Resting heart rate should be determined by taking your pulse after sitting quietly for five minutes. When checking heart rate during a workout, take your pulse within five seconds after interrupting exercise because it starts to go down once you stop moving. Count pulse for 10 seconds and multiply by six to get the per-minute heart rate.

VII. CONTROLLING YOUR WEIGHT

The key to weight control is keeping energy intake (food) and energy output (physical activity) in balance. When you consume only as many calories as your body needs, your weight will usually **remain** constant. **If you take in more calories than your body needs, you will put on excess fat. If you utilise more energy than you take in, you will burn excess fat.**

Exercise plays an important role in weight control by increasing energy output, calling on stored **calories** for extra fuel. **Recent studies show that not only does exercise increase metabolism during a workout but it causes your metabolism to stay increased for a period of time after exercising, allowing you to burn more calories.**

How much exercise is needed to make a difference in your weight depends on the amount and **type of** activity, and on how much you eat. Aerobic exercise burns body fat. A medium-sized adult would **have to** walk more than 30 miles to burn up 3,500 calories, the equivalent of one pound of fat.

Although that may seem like a lot, you don't have to walk the 30 miles all at once. Walking a mile a day for 30 **days will** achieve the same result, provided you don't increase your food intake to negate the effects of walking

If you consume 100 calories a day more than your body needs, you will gain approximately 10 pounds in year. You could take that weight off, or keep it off, by doing 30 minutes of moderate exercise daily. The combination of exercise and diet offers the most flexible and effective approach to weight control.

Since muscle tissue weighs more than fat tissue, and exercise develops muscle to a certain degree, **your** bathroom scale won't necessarily tell you whether or not you are "fat." Well-muscled individuals, with relatively little body fat, invariably are "overweight" according to standard weight charts. If you are doing regular program of strength training, your muscles will increase in weight, and possibly your overall weight will increase. **Body composition is a better indicator of your body condition than body weight.**

Lack of physical activity causes muscles to get soft, and if food intake is not decreased, added body weight is almost always fat. Once-active people, who continue to eat as they always have after settling into sedentary lifestyles, tend to suffer from "creeping obesity."

VIII. FACTORS INFLUENCING PHYSICAL FITNESS

1. Age 2. Sex 3. Body Composition

Diet and Physical Activities

Do you know that you need to burn off 3,500 calories more than you take in to lose just one kg? If you're overweight, eating your usual amount of calories while increasing activity is good for you, but eating fewer calories and being more active is even better. The following chart gives you an idea of the calories used per hour in common activities. Calories burned differ in proportion to body weight. so these figures are averages.

Activity Calories Burned Per Hour - Calories burned per hour in different activities has been given in the following Table just for reference.

Calories burned per hour in some Activities

Bicycling	6 mph	240 calories
Bicycling	12 mph	410 calories
Jogging	5.5 mph	740 calories
Jogging	7 mph	920 calories
Jumping rope	-	750 calories
Running in place	-	650 calories
Running	10 mph	1,280 calories
Cross-country	-	700 calories
Swimming	25 yds/min	275 calories
Swimming	50 yds/min	500 calories
Tennis (singles)	-	400 calories
Walking	2 mph	240 calories
Walking	4 mph	440 calories

Climate

Physical fitness by and large also gets influenced by different climatic conditions such as winter, summer humid etc.

When it's Hot or Humid:

Exercise during cooler and/or less humid times of day. Try early morning or late evening.

Drink plenty of fluids especially water. Avoid alcohol, which encourages dehydration.

Wear light, loose-fitting clothes.

Stop at the first sign of muscle cramping or dizziness.

When it's cold:

Dress in layers.

Wear gloves to protect your hands.

Wear a hat or cap. Up to 40% of body heat is lost through your neck and head.

Adjust the size of your shoes if you need to wear thicker socks. Warm up slowly.

Drink plenty of fluids. You can get dehydrated in the winter, too. Stop if you experience shivering, drowsiness or disorientation.

IX. CLOTHING

All exercise clothing should be loose-fitting to permit freedom of movement, and should make the wearer feel comfortable and self-assured.

As you know that exercise generates great amounts of body heat. Light-coloured clothing that reflects the sun's rays is cooler in the summer, and dark clothes are warmer in winter. When the weather is very cold it's better to wear several layers of light clothing than one or two heavy layers. The extra layers help trap heat, and it's easy to shed one of them if you become too warm.

In cold weather, and in hot, sunny weather, it's a good idea to wear something on your head. Wool watch or ski caps are recommended for winter wears, and some form of tennis or sailor's hat that provides shade and can be soaked in water is good for summer.

Never wear rubberized or plastic clothing. Such garments interfere with the evaporation of perspiration and can cause body temperature to rise to dangerous levels.

The most important item of equipment for the runner is a pair of sturdy, properly fitting running shoes. Training shoes with heavy, cushioned soles and arch supports are preferable to flimsy sneakers and light racing flats.

X. WHEN TO EXERCISE

The hour just before the evening meal is a popular time for exercise. The late afternoon workout provides a welcome change of pace at the end of the workday and helps dissolve the day's worries and tensions.

Another popular time to work out is early morning, before the workday begins. Advocates of the early start say it makes them more alert and energetic on the job.

Among the factors you should consider in developing your workout schedule are personal preference, job and family responsibilities, availability of exercise facilities and weather. It's important to schedule your workouts for a time when there

is little chance that you will have to cancel or interrupt them because of other demands on your time.

You should not exercise strenuously during extreme hot, humid weather, or within two hours after eating. Heat and/or digestion both make heavy demands on the circulatory system, and in combination with exercise can be an overtaxing double load.

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