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# IMPORTANCE OF PHYSICAL FITNESS NORMS FOR PLAYERS

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**Abstract:**

*The norms are values considered to be representation of a specified population. Norms are usually based on age, grade, height, weight or various combinations of these characteristics. There are five components of physical fitness: (1) body composition, (2) flexibility, (3) muscular strength, (4) muscular endurance, and (5) cardiorespiratory endurance. A well-balanced exercise program should include activities that address all of the health-related components of fitness. Fitness norms show us how we rank in comparison to others within the same age-group and gender. They tell us our percentile ranking and fitness category. There is nothing wrong with using normative data to show people where they rank as compared to their peers; this is very informative. All adults should undertake 150–300 min of moderate-intensity, or 75–150 min of vigorous-intensity physical activity, or some equivalent combination of moderate-intensity and vigorous-intensity aerobic physical activity, per week.*

**Keywords:** *Marketing communication, Brand, Marketing, Strategy, Digitalization, Fast Movable Goods.*



## Introduction :

The focus of every individual or a team in sports is to win the game where the participated as our society attaches great significance to “winning”. In view of Renewes (1972), “Performance is key note of all sports its basic principles. Since the sports have become prestigious aspect to prove one’s superiority, the philosophy of participating in games and sports has undergone a great change”. Sports performance is a tidimensional product of athlete’s capacities and their interaction with athletic environment. Being multidimensional suggests that a variety of factors are involved in actually

According to Harrl Dhetrich (1982), adoption of modern scientific methodologies in sports training activities have made sports to stand at another heights by setting up new goals in modern sports. Due to which the standards of performance is raised and new records are being set for human skill and More over sports training has become more efficient and effective, as a result of which the fundamental and applied research have been developed in the area of mechanics, physiology, psychology, nutrition and sports medicine.

Hence competition at all levels are so keen that no coach or player can afford to neglect the application of scientific training principles that can give him as advantage over or at least keen him in pace with his/her opponent.

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**Physical Fitness:**

Physical fitness is the most important determinant of excellent performance in sports. However, importance of various components of fitness varies with different sports for better performance. Physical fitness is possible through the study of motor fitness. The motor fitness can be understood by analysis of its components like speed, strength, endurance flexibility, agility, coordination ability and balance.

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure. The energy expenditure can be measured in kilocalories. Physical activity in daily life can be categorized into occupational, sports, conditioning, household, or other activities.

Physical fitness measures are closely allied with disease prevention and health promotion, thus it is common and appropriate to measure components of physical fitness before preventive and rehabilitative programs. Physical fitness can be modified through regular physical activity and exercise. Physical fitness components have been shown to have a significant positive relationship with enhanced outcomes in physical activity, including sports participation.

Physical fitness refers to an athlete's capacity to meet the varied physical demands of their sport without reducing the athlete to a fatigued state. The components of physical fitness are (Davis 2000):

- Body Composition
- Endurance
- Flexibility
- Strength
- Speed

**Motor Fitness:**

Motor Fitness refers to an athlete's ability to perform successfully in their sport. The components of motor fitness are (Davis 2000)[2]:

- Agility
- Balance
- Coordination
- Power (speed & strength)
- Reaction Time

**Improving your condition:**

Identify the most important fitness components for success in your sport or event. Then, design sport/event specific conditioning and training programs to enhance these fitness components and energy systems.

**Conditioning Exercises:**

The following are examples of general conditioning exercises:

- General core stability exercises
- General all-around body conditioning exercises using dumbbells
- General conditioning exercises for the upper body
- General and specific leg conditioning exercises
- Specific exercises to develop lower leg strength and foot speed

**Tests for fitness components:**

| Fitness Component | Recognised Test |
|---|---|
| Agility | Illinois Agility Test |
| Balance | Standing Stork Test |
| Body Composition | Skinfold measures |
| Cardiovascular Endurance | Multistage Fitness Test |
| Flexibility | Sit & Reach test |
| Muscular Endurance | NCF Abdominal Conditioning Test |

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| | |
|---|---|
| Power | Standing Long Jump or Vertical Jump |
| Speed | 30-metre Sprint |
| Strength | Handgrip Dynamometer |

**Components of Physical Fitness:**

Physical fitness can be broadly divided into Metabolic fitness, Health- related and Skill-related.

**Metabolic Fitness:**

It depicts the physiological systems' state of health when they are at rest.

1. **Blood pressure-** It involves indirect measuring the effectiveness of the heartbeat, adequacy of blood volume and presence of any obstruction to vascular flow through the use of sphygmomanometer and a stethoscope. Normal BP is 120/80
2. **Pulse rate-** It is the number of throbbing sensations felt over a peripheral artery when the heart beats. Normal ranges from 60 to 100 pulses per min.
3. **Blood insulin-** Insulin test measures blood samples for the amount circulating insulin, responsible for blood glucose usage by surrounding tissue. Normal values are 5 to 20µm/mL while fasting. Lower than normal suggest Type 1 diabetes and above normal level suggests Type 2 diabetes.

**Health-Related Fitness:** Good health have a strong relationship with health related components of physical fitness because it determines the ability of an individual to perform daily activities with vigor and demonstrate the capacities associated with low risk of premature development of the hypokinetic diseases. It is also known as physiological fitness.

The main aims of health-related fitness testing are :

- Educating clients about their present health-related fitness status in relationship to standard age and sex-matched normative values
- Providing data that are helpful for making clinical decision while prescribing exercises to address all fitness components
- Collecting baseline and follow up data that allow evaluation of progress by exercise program participants
- Motivating participants by establishing SMART goals
- Stratifying cardiovascular risk

The components of health-related fitness includes: body composition, muscular endurance, muscular strength, cardiovascular endurance and flexibility.

**Body Composition:** Body composition can be expressed as the relative percentage of body mass that is fat and fat-free tissue using a two-compartment model. It can be measured with both laboratory and field techniques that vary in terms of complexity, cost, and accuracy. Anthropometric methods are: Body mass index, Circumferences and Skinfold measurements. Hydrodensitometry weighing, plethysmography are some methods used in lab.

1. Skin fold thickness 2. BMI
3. Waist to hip ratio

**Skin fold thickness-** measurements involve measuring skin and subcutaneous adipose tissues at several different standard anatomical sites around the body and converting these measurements to percentage body fat. The anatomical sites include:

**For Males:**

- Chest fold
- Abdominal fold
- Thigh fold

Body density = 1.10938 & 0.0008267 (sum of three skinfolds) + 0.0000016 (sum of three skinfolds)$^2$ & 0.0002574 (age) [SEE 0.008 or ~3.4% fat]

**For Female:**

- Triceps fold

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- Suprailiac fold
- Thigh fold

Body density = 1.099421 & 0.0009929 (sum of three skinfolds) + 0.0000023 (sum of three skinfolds)$^2$ & 0.0001392 (age) [SEE 0.009 or ~3.9% fat]

*SEE: Standard error of estimate[6][3]

**-BMI-** Key index for relating a person's body weight to height.

BMI= M/(H*H), where M= body mass in kilograms and H= height in meters

(A higher BMI score usually indicates higher levels of body fat)

**-Waist to hip ratio-** Measured using a tape measure around the waist and the largest hip circumference. The ratio is a simple calculation of the waist girth divided by the hip girth.

| Risk category | Women | Men |
|---|---|---|
| Very Low | <70 cm (27.5 in) | <80 cm (31.5 in) |
| Low | 70–89 cm (28.5–35.0 in) | 80–99 cm (31.5–39.0 in) |
| High | 90–109 cm (35.5–43.0 in) | 100–120 cm (39.5–47.0 in) |
| Very High | >110 cm (>43.5 in) | >120 cm (>47.0 in) |

**Muscular Fitness:** It includes muscular endurance and strength. They determine bone mass, glucose tolerance, musculo-tendinous integrity, and ability to carry out ADLs. Muscle function tests are very specific to the muscle group tested , the type of contraction, the velocity of muscle movement, the type of equipment, and the joint range of motion.

**Muscular Strength:** It is the muscle's ability to exert force at high intensities over short periods of time. Static or isometric strength can be assessed by using various devices such as dynamometer and tensiometers. 1 repetition maximum (1- RM), the greatest resistance that can be moved through the full range of motion in a controlled manner with good posture, is the standard for dynamic strength assessment. The following represents the basic steps in 1-RM (or any multiple RM) testing following familiarization/practice sessions:

1. The subject should warm up by completing several submaximal repetitions.
2. Determine the 1-RM (or any multiple RM) within four trials with rest periods of 3 to 5 minutes between trials.
3. Select an initial weight that is within the subject's perceived capacity.
4. Resistance is progressively increased by 2.5 to 20 kg until the subject cannot complete the selected repetition(s); all repetitions should be performed at the same speed of movement and range of motion to instill consistency between trials.
5. The final weight lifted successfully is recorded as the absolute 1-RM or multiple RM.

**Muscular Endurance:** It is the ability of muscle group to execute repeated contractions over a period of time sufficient to cause muscle fatigue, or to maintain a specific percentage of the maximal voluntary contraction for a prolonged period of time. Absolute muscular endurance is the total number of repetitions at a given amount of resistance is measured. Relative muscular endurance is the number of repetitions performed at a percentage of the 1 -RM (e.g: 75%) which is in both pre- and post-testing. A simple field test such as the maximum number of push-ups that can be performed without rest may be used to evaluate the endurance of upper body muscles.

**Cardiorespiratory Endurance:** Cardiorespiratory fitness is related to the ability to perform large muscle, dynamic, moderate to high intensity exercise for prolonged periods. The performance depends upon the functional state of the respiratory, cardiovascular, and

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skeletal muscle systems. The criterion measure of cardiorespiratory fitness is determined by maximal oxygen uptake (VO2max). The best measure of cardio-respiratory fitness is VO2 max, volume (V) of oxygen used when a person reaches his or her maximum (max) ability to supply oxygen (O2) to muscle tissue during exercise.

**Flexibility:** Flexibility is the ability to move a joint through its complete range of motion. It is important in the ability to carry out ADLs and in athletic performance. It depends on a number of specific variables including distensibility of the joint capsule, adequate warm-up, and muscle viscosity. Flexibility is joint specific, thus, no single flexibility test can be used to evaluate total body flexibility. Goniometers, inclinometers, electrogoniometers, the Leighton flexometer and tape measures are some common devices to measure flexibility in degrees. Sit and reach test is one of the flexibility tests.

**Skill-related Fitness:** It is also known as performance-related fitness components. It is associated with athletic competition but should be considered in the overall fitness of all individuals. These components are pertaining with the athletic ability of an individual. There are 6 components of physical fitness: balance, co-ordination, agility, speed , power, and reaction time.

**Balance:** Balance is the ability of an individual to maintain their line of gravity within their base of support. It can be classified into static and dynamic. Balance is control by three different system: somatosensory, visual and vestibular system. It can be assessed by various outcome tools such as berg balance scale, BESTest etc.

1. One leg stance test- Individual is asked to stand on 1 leg for 10s with eyes open or closed
2. Sharpened Romberg's test- Individual stands with both feet in tandem (feet touching heel to toe) with eyes closed to mask the problem with balance.
3. Time up and Go test- This balance test measures the time needed to rise to standing from a chair, walk 3m, turn, walk back to chair and sit down.

**Coordination:** It is the ability to use the senses, such as sight and hearing, together with body parts in performing motor tasks smoothly and accurately.[2]Alternate hand wall toss test is one the test via which co-ordination can be assessed. The below attached video explains this test.

1. Begin by explaining what the person needs to do in this test.
2. The ball is struck against the wall and caught by the other hand.
3. This has to be continued until 30 seconds.

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