Fitness Components

Instructions: Define fitness components and give examples.

Fitness Components	**Definition**	**Examples in Sport**
Cardiovascular Endurance	The combined ability of: - the pulmonary system to exchange oxygen between the outside air and the blood circulating through capillaries in the lung - the cardiovascular system to transport oxygen to the working muscles - the muscular system to use oxygen	- **Marathon** - **Swimming** - **Cycling**
Flexibility	- the capacity of a joint to move through a full range of motion (limited by bones, muscles, ligaments, tendons, and the bone-joint capsule).	- **Gymnastics** - **Ballet**
Muscular Strength	- the maximum amount of force that can be exerted by a muscle or group of muscles in a single effort.	- **Weightlifting** - **Javelin** - **Shot Put**
Muscular Endurance	- the ability of a muscle or group of muscles to exert force over an extended period of time without incurring fatigue.	- **Rowing** - **Speed Skating**
Speed	- the ability to move one's body and/or body parts as quickly as possible, in the shortest amount of time.	- **Sprints** - **Javelin**
Agility	- the ability to move the body in different directions (e.g., forwards, backwards, sideways) quickly and efficiently; the ability to change the direction of one's movement rapidly and accurately.	**- Basketball** **- Tennis** **- Hockey**
Balance	- the ability to control or stabilize one's equilibrium while moving (dynamic balance) or remaining stationary (static balance).	- **Gymnastics** - **Judo** - **Ballet**
Coordination	- the integration of an individual's body parts (e.g., arms, legs, hands, feet, head, torso) to produce a smooth, fluid motion; the ability to use the body's senses to perform motor tasks smoothly and accurately.	- **Batting** - **Spike Serve** - **Badminton**
Power	- the ability to apply maximum strength (i.e., a muscular contraction) with the quickest possible speed (e.g., putting the shot); the transfer of energy into force at a fast rate.	- **Boxing** - **Long Jump**
Kinesthetic awareness	- is a sensory skill that your body uses to know where it is in space.	- **Batting** - **High Jump**

1) What is Physical Fitness?
Physical fitness, in general terms, is a person's ability to meet the physical stresses and demands of a variety of physical activities efficiently and effectively. Physical fitness provides a person with the capacity to perform work safely in activities of daily living, including activities required for work at home and in the workplace, for leisure-time pursuits, and for sports.

2) What are the Fitness Benefits of Physical activity?
   a) Regular physical activity increases the body's capacity and efficiency for work ,
   b) reduces the risk of injury and disease,
   c) positively affects body composition(increased muscle mass & bone mass, and decreased fat mass).
   d) Movement places increased demands on the cardiovascular, respiratory, muscular, skeletal, and nervous systems of the body. Each system benefits from an activity plan that has consistent and progressive increases in the level of work intensity (activities that are harder to do and takelonger to complete). The body's systems adapt to the increasing load, resulting in greater efficiency in these systems and thereby resulting in an increased ability to perform work. In other words, the body is able work longer and harder than it was able to before. After a person has achieved a new level of fitness, everyday tasks are no longer as difficult as they once were.

3) **What are some noticeable changes resulting from physical activity:**
   i) increased heart and circulatory function and endurance, seen as a lower heart rate for a given activity and a lower resting heart rate
   ii) increased muscular strength, seen as an ability to lift heavier loads or an increased ease in lifting lighter loads
   iii) increased muscular endurance, seen as the ability to execute more repetitions without rest
   iv) increased bone strength, seen as a decreased risk of fracture or injury
   v) increased joint range of motion or flexibility, seen as an ability to reach or move into body positions impossible to attain previously
   vi) increased physical work capacity, seen as an ability to complete more work in a single bout (e.g., shovelling a driveway with lower risk of injury or adverse effect)
   vii) improved body composition (more muscle, stronger bones, and less body fat)

4) **Physical activity and exercise reduce the risk of diseases and conditions such as:**
   a) heart attack or heart disease
   b) second heart attack
   c) stroke
   d) high cholesterol and triglycerides (fats)
   e) high blood pressure (hypertension)
   f) abnormal blood sugar levels
   g) type 2 diabetes
   h) osteoporosis (reduced bone density)
   i) pain
   j) arthritis and total hip or knee replacements
   k) depression and anxiety
   l) sleep
   m) colon, lung, breast, prostate, and many other cancers
   n) Apnea

5) **Physical activity and exercise can also result in benefits such as:**
   a) improved pain tolerance
   b) improved self-esteem
   c) improved immune system
   d) better posture and balance
   e) decreased incidence of unintended falls
   f) greater energy
   g) improved sleeping habits
   h) faster recovery from injury or surgery

i) increased high-density lipoproteins (HDL, or the "good" cholesterol)
j) increased potential to achieve & maintain a healthy body weight by burning calories
k) improved work capacity
l) improved nervous system (better neurons)

6) Physical activity participation provides children and youth with opportunities for growth and development far beyond the obvious health benefits. What are the benefits of exercise affect the metal-emotional health of an individual?

Participation in sport, exercise,and physical activity also helps individuals:

a) develop social skills, such as sharing, taking turns, cooperating, learning about winning and losing
b) develop physical skills (e.g., coordination, posture, balance), locomotor skills (e.g., running), & manipulation skills (e.g., using a racquet or hockey stick),which contribute to a person's self-efficacy
c) develop a sense of belonging (when doing things with others, either in casual or organized activities and sports)
d) develop family relationships (when parents play and exercise with their children and support their children's sports)
e) achieve academically in school
f) prevent or control risky behaviours, such as the use of tobacco, alcohol, or other substances, unhealthy diets, or violence
g) develop increased self-discipline, greater self-esteem, and a healthier body image
h) increase opportunities to take on leadership roles, deal with adversity, and develop the ability to manage time

7) Physical fitness is more easily understood by examining its components, or parts. There are two categories of physical fitness components: health-related fitness components and skill-related fitness components:

Health-related fitness components consist of

- cardiorespiratory endurance
- muscular strength
- muscular endurance
- flexibility
- body composition

Skill-related fitness components include

- agility
- balance
- coordination
- speed
- power
- reaction time

8) **The FITT Principle -**A well-designed personal physical activity plan will outline how often (frequency), how long (time), and how hard (intensity) a person exercises, and what kinds of exercises (type) are selected. The exercise frequency, intensity, time, and type (FITT principle) are key components of any fitness plan or routine.

a) F – Frequency
b) I – Intensity
c) T – Type
d) T - Time

Stages of Change

Changing our attitudes and behaviours is a process that occurs over time, and we are all at different stages of readiness to change. The Stages of Change model, as outlined by Prochaska, Norcross, and DiClemente, consists of five stages, which can help determine where individuals are in the process of changing their attitudes and behaviours related, for example, to increasing physical activity:

1. **Pre-contemplation:** People in this stage are not thinking about changing their inactive or sedentary behaviour and are not aware of their problem. They have not considered changing.
2. **Contemplation:** People in this stage have thought about their problem, can identify that they are inactive, and have devoted some thought to changing. They have not taken action to change, or they may be beginning to consider options for change.
3. **Preparation/decision:** People in this stage have begun the process of change by examining possibilities and options, such as considering a gym membership, looking at new exercise clothing, wanting to start using a pedometer, or contemplating a noon-hour walking program.
4. **Action:** People in this stage have taken steps to overcome their sedentary lifestyle by modifying their behaviour, experiences, or environment in order to overcome their problem. Action involves the most overt behavioural changes and requires a commitment of time and energy.
5. **Maintenance:** People in this stage consolidate the gains attained as a result of initial action through sustained involvement in the new behaviour, in this case an active lifestyle (or avoidance of the old behaviour—physical inactivity). Adoption of the new behaviour usually requires a period of many weeks to months.

Understanding Motivation for Physical Activity

Self-regulation (or self-control) is an important concept for understanding why individuals are motivated to exercise or to be physically active. Factors that influence self-control can be organized into two categories: intrinsic motivators and extrinsic motivators.

1) Intrinsic motivation represents our internal drive toward behaviour.
2) Extrinsic Motivation includes factors such as rewards and punishments.
3) **Please list four examples of intrinsic motivators to exercise:**
   a) Improved health
   b) Enhanced personal skills and ability
   c) Increased energy
   d) Decreased stress
4) **Please list four examples of extrinsic motivators to exercise:**
   a) Desire to lose weight
   b) Get in better shape
   c) Personal appearance
   d) Social suppor

Barriers to Physical Activity

5) **What are examples of Personal Barriers to engaging in regular physical activity?**

a) insufficient time to exercise
b) inconvenience of exercise
c) lack of self-motivation
d) non-enjoyment of exercise
e) boredom with exercise
f) lack of confidence in their ability to be physically active (low self-efficacy)
g) fear of being injured or having been injured recently
h) lack of self-management skills, such as the ability to set personal goals, monitor progress, or reward progress toward such goals
i) lack of encouragement, support, or companionship from family and friends
j) non-availability of parks, sidewalks, bicycle trails, or safe and pleasant walking paths close to home or the workplace

6) What are the top three barriers to engaging in physical activity across the adult lifespan are:

a) time b) energy c) motivation

7) **What are the barriers to engaging in physical activity across the adult lifespan are:**

a) time b) energy c) motivation
d) cost h) partner issues l) uneasiness with change
e) facilities i) skill m) unsuitable programs
f) illness or injury j) safety considerations
g) transportation k) child care

8) **What are examples of Environmental Barriers?**

a) accessibility of walking paths
b) accessibility of cycling trails
c) accessibility of recreation facilities
d) traffic
e) availability of public transportation
f) crime
g) pollution
h) social environment, such as support from family and friends, and community spirit.

9) **What are the 3 intensities?**

a) **Light activities** are physical activities that involve large muscle groups. While engaging in light activities, people begin to notice their breathing, but they can still talk fairly easily.

b) **Moderate activities** are physical activities that cause breathing and heart rate to increase. People engaging in moderate activities can hear themselves breathe, but they can still talk.

c) **Vigorous activities** are physical activities that cause breathing and heart rate to increase to a higher level, making it difficult to talk.

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Principles of Training and Conditioning for Physical Activities

1. **Principle of Progressive Overload:** The principle of overload suggests that in order to see an improvement in fitness (i.e., response), the dose of physical activity must exceed that to which the individual is already accustomed. The dose of physical activity is controlled by the manipulation of frequency, intensity, time, and type of exercise, otherwise known as the FITT principle. However, for overall/absolute training progress, the individual's muscles or muscle groups must be subjected to greater and greater overloads over time.
2. **Principle of Specificity:** The principle of specificity suggests that improvements in physical fitness are specific to the demands or characteristics (e.g., FITT, speed, angle, acceleration, muscle fibre recruited) imposed by the physical activity. This principle is also known as the SAID principle (specific adaptation to imposed demands).
3. **Principle of Reversibility/Regularity:** The principle of reversibility/regularity suggests that any improvement in physical fitness due to physical activity is entirely reversible. In other words, "use it or lose it." This principle suggests that regularity and consistency of physical activity are important determinants of both maintaining and improving fitness.
4. **Principle of Diminishing Return:** The principle of diminishing return suggests that the rate of fitness improvement diminishes over time as fitness approaches its ultimate genetic potential. Colloquially stated, as fitness improves, "you receive less bang for your buck."
5. **Principle of Stress/Rest:** The principle of stress/rest suggests that, following an exercise session or workout, the body requires adequate rest to recover the energy that was expended and to make repairs to the muscle tissues. The length and kind of rest depend upon the intensity of the exercise session or workout and the fitness level of the individual. If sufficient recovery time is not allowed for adaptation, fitness may decrease, fatigue may set in, and injury may occur. This is commonly referred to as over-training.
6. **Ceiling Principle:** The ceiling principle suggests that as an individual increases his or her physical fitness, the rate of improvement gets smaller to the point of no improvement, referred to as a plateau. Everyone has his or her own ceiling for improvement, which is affected by genetics (e.g., proportion of slow-twitch to fast-twitch muscle fibres). Strategies to minimize the ceiling effect include: a temporary layoff from the workout schedule, a change in routine, a change in the intensity of the workout, and cross-training (i.e., a variety of exercises incorporating cardiovascular, strength, endurance, and flexibility choices).
7. **Maintenance Principle:** The maintenance principle suggests that once an individual reaches a level of fitness that meets his or her needs, it is possible to maintain the results gained through a reduction in training frequency (up to one third); however, the intensity and duration must remain the same.
8. **Principle of Individual Variability:** The principle of individual variability suggests that the individual response (i.e., adaptation) to physical activity is highly heterogeneous. In other words, no two individuals will respond in exactly the same way to a similar dose of physical activity.
9. **Starting Point Principle:** The starting point principle suggests that in order to bring about long-term physical changes/improvements in the way the body functions, the body must be provided with greater stress than it regularly encounters in "everyday life." The lower the baseline or starting point is, the easier it is to see improvements, and the higher the starting point is, the harder it is to see significant gains.
10. **FITT Principle:** The four variables that need to be considered when developing an exercise program are:

- **F**requency: the number of training sessions per week; depends on the intensity and duration of the activity to allow for sufficient recovery.
- **I**ntensity: the level of execution on how hard an individual must work to create an overload without injury.
- **T**ime: the length or duration of the workout; depends on the intensity and goals of the program.
- **T**ype: the type of exercise to meet objectives, goals, and needs (e.g., aerobic, anaerobic, resistance programs).

Instructions: Match the following words with their correct descriptor. Put the correct number in the box beside the term.

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Term	Number	Descriptor
Progressive Overload	**6**	**1. - the highly trained individual who achieves small incemental performance gains through repeated training**
Specificity	**10**	**2. - prevention of over-training**
Reversibility /Regularity	**3**	**3. – stop training a muscle or muscle group and muscles lose the benefits that were achieved through training**
Diminishing Return	**1**	**4. – reducing training frequency but maintaining intensity and duration**
Stress /Rest	**2**	**5. – a minimum of three or more times a week for 45 to 60 minutes to develop and/ or sustain cardiovascular fitness**
Ceiling	**9**	**6. – a muscle training program in which the amount of resistance is systematically increased as the muscles gain strength**
Maintenance	**4**	**7. - a baseline from which to develop a fitness program and assess results**
Individual Variability	**8**	**8. – no two individuals respond the same to a particular training/exercise program**
Starting Point	**7**	**9. – a plateau**
FITT Principle	**5**	**10. – developing the leg muscles by performing squats would benefit the execution of the basketball jump shot**