SAFETY AND FIRST AID
ENUMERATES WAYS TO SAFEGUARD PARTICIPANTS FROM POSSIBLE INJURIES

Quarter 1 – MODULE 3
Session: WEEK 3

What I Need to Know?

This module was developed to help the learners demonstrates understanding of safety, injury prevention and management in sports, exercise and recreational settings for prompt and proper response during emergencies. The learners demonstrates safety practices consistently in sports, exercise and recreational activities.

This lesson will guide the learners to identifies activities for restoring strength and condition of participants after rehabilitation; SP_SFA11-Ic-4

At the end of the module, you should be able to:
1. Understand the basic anatomy of human body
2. Identify the physical activity pyramid
3. Discuss the proper nutrition program for sports safety
4. Learn the importance of FITT principles in relation to sports safety

Task 1: PRE-TEST

Direction: MATCHING TYPE. Choose the letter of the correct answer from column B. Write your answer on your Study Sheet.

HUMAN ANATOMY

1. Also called as Cancellous bone or trabecular bone, light, porous bone enclosing numerous large spaces that give a honeycombed or spongy appearance.
   A. Ligament
2. Is the spongy tissue inside some of your bones, such as your hip and thigh bones. It contains stem cells.
   B. Tendons
3. Is a tough band of white, fibrous, slightly elastic tissue.
   C. Spongy bone
4. It connect muscles to bones
   D. Bone marrow

FITNESS

5. During exercise muscle cells use oxygen to produce energy for movement.
   A. Target Heart Rate
   B. Tendons
   C. Spongy bone
   D. Bone marrow
6. During exercise muscle uses up more oxygen than the blood can supply
7. Is the number of times your heart beats per minute while at complete rest
8. Is the minimum number of heartbeats in a given amount of time in order to reach the level of exertion necessary for cardiovascular fitness, specific to a person’s age, gender, or physical fitness.
9. Is the maximum number of beats made by your heart in 1 minute of effort.
10. The number of sessions each week
11. Degree of effort put forth by the individual during exercise
12. Duration of activity
13. Mode of exercise being performed

What’s In?

Task 2: Copy and answer the picture below on your Study Sheet. Label the parts of the skeletal system and write your answer on the box. Choose your answer from the box.

**CHOICES**

- PATELLA
- TIBIA
- STERNUM
- ULNA
- HUMERUS
- RIBS
- FEMUR
- CLAVICLE
- FIBULA
- METACARPALS
- RADIUS
- SCAPULA
- SKULL
- TARSALS
- SPINE
- PELVIS
- PHALANGES
- CARPALS
TASK 3: Labelling the Skeletal System. Multiple Choice. Label the parts of the skeletal system. Write your answer on your Study Sheet.
Sports, exercise and recreation are activities that have a high risk of injuries. Safety and prevention of injuries should be the foremost concern of teachers to the student to minimize if not eliminate injuries during the activity.

**BASIC ANATOMY OF HUMAN BODY**

To understand the basic of safety in sports, exercise and recreation is to know better the anatomy of human body. The illustration below is the basic anatomy of human body that an individual must know and understand as standard for safety in sports, exercise and recreation.

**Figure 1: HUMAN ANATOMY**
What are the bones made up of?

1. **Compound Bone**
   - **Spongy bone** or **Cancellous bone**, also called **trabecular bone**, light, porous bone enclosing numerous large spaces that give a honeycombed or spongy appearance.
   - **Bone marrow** is the spongy tissue inside some of your **bones**, such as your hip and thigh **bones**. It contains stem cells. The stem cells can develop into the red blood cells that carry oxygen through your body, the white blood cells that fight infections, and the platelets that help with blood clotting.

![Figure 2: COMPACT BONE](image2)

2. **Ligaments**
   - A ligament is a tough band of white, fibrous, slightly elastic tissue.
   - Binding the bone ends together to prevent dislocation and excessive movement that might cause breakage

![Figure 3: LIGAMENTS](image3)
3. **Muscles**

   - There are more than 600 muscles in your body
   - Smooth muscles
   - Cardiac muscles
   - Skeletal muscles

   - Each muscle will have an origin and insertion

![Muscles Image](image1)

4. **Tendon**

   - Tendons connect muscles to bones

![Tendon Image](image2)

**NUTRITION**

A proper nutrition program is important to build a strong and healthy body. As recommended by the Food and Nutrition Research Institute, a healthy eating plan consists of balance servings from a variety of food. Moderation and a combination of exercises will help individual attain fit and healthy body.

*Here are some healthy tips in building tips in building a healthy food foundation:*

- Use a healthy diet pyramid
- Eat enough grains, don’t forget the whole grains
- Includes fruits and vegetables, eat colourful vegetables and fruits.
- Get sufficient protein and focus more on calcium
- Reduce fat, oil, sugar and salt.
- Avoid or minimize alcohol
So remember……..

- Use the healthy diet pyramid to achieve a balance diet that provides all the nutrients you needed each day.
- For better nourishment, eat a wide variety of food and remember to include whole grains, fruits, vegetables and calcium-rich food.
- Select healthier food choices that are lower in salt, added sugar and fat (especially saturated and transfat).
One of the important considerations in attaining safety in sports, exercise and recreation is to understand the principle of training in sports and physical activity. There are many fitness and exercise principles emerged in the field but the most commonly used and effective program is the FITT principle.

**Aerobic Exercise** — with oxygen
- Continuous exercise for 20-60 minutes
- Muscle cells use oxygen to produce energy for movement.
**Examples of Aerobic Exercises:**

- **Anaerobic Exercise** – without oxygen
  - Intense physical activity that last only from a few seconds to a few minutes
  - Muscle uses up more oxygen than the blood can supply

**Examples of Anaerobic Exercises:**

**STEPS TO DESIGN A FITNESS PROGRAM:**

1. **Determine your Resting Heart Rate/Pulse Rate (RHR)**
   - **RESTING HEART RATE** - is the number of times your heart beats per minute while at complete rest. Resting heart rate will decrease as your beat becomes stronger with aerobic exercise training. A low resting heart rate is an indicator of good fitness.
   - **How to do it?**
     - Stop momentarily or take a rest for a while.
     - Take your pulse for 15 seconds in your carotid or radial artery.
     - Place your index finger and third finger on your neck to the side of your windpipe.
     - Multiply the result by 4 to calculate your beats per minute.

2. **Calculate you Target Heart Rate**
   - **TARGET HEART RATE** - is the minimum number of heartbeats in a given amount of time in order to reach the level of exertion necessary for cardiovascular fitness, specific to a person’s age, gender, or physical fitness.
How to get it?

**CALCULATE TARGET HEART RATE**

Maximum Heart Rate (MHR) Formula:
220 – age X % Intensity
Example: 45 years old

\[
\begin{align*}
60\% \text{ Intensity} - & \quad 175 \text{ MHR (220 – age)} \\
& \times 0.60 (\text{percent intensity}) \\
= & \quad 105 (\text{target heart rate})
\end{align*}
\]

\[
\begin{align*}
80\% \text{ Intensity} - & \quad 175 \text{ MHR (220 – age)} \\
& \times 0.80 (\text{percent intensity}) \\
= & \quad 140 (\text{target heart rate})
\end{align*}
\]

Set your fitness goals.
The practical way to set your fitness goal is to be SMART, many tips and recommendations is available in the internet and even your personal fitness trainer will advise you the same but the most important thing is YOURSELF, on who you will keep track of your progress and how determine you would like to ACHIEVE your GOAL.

**The FITT Principle – Cardiorespiratory Endurance**
- **Frequency:** 3 – 5 x/week
- **Intensity:** Target Heart Rate Range
- **Time:** 30 – 60 minutes
- **Type:** Cardiorespiratory

**The FITT Principle – Developing Muscle**
- **Frequency:** 2 – 3 x/week
- **Intensity:** 3 sets of 8 – 12 (all major muscle group)
- **Time:** 30 – 60 minutes
- **Type:** Muscular Strength/Muscular Endurance

**The FITT Principle – Flexibility**
- **Frequency:** 3 – 5 x/week (best results=daily)
- **Intensity:** 15 – 30 seconds per stretch, repeat each stretch 3 – 5 times
- **Time:** 15 – 30 minutes
- **Type:** Flexibility

Now you have clear view of how to do a design a fitness and training program. A few tips to remember for safety workout.....
- Get your body in good condition at all time.
- Warm-up before exercise and cool-down after exercises.
- Stretch muscles to avoid injuries.
- Drink plenty of water or at least 8 – 10 glasses/day
- Follow the FITT principle and consider other components in designing your fitness program.
- Make sure you are guided in your workout program, if not sure ask for the assistance to the use of equipment to avoid injuries.

**What’s More?**

Task 4: Creating “My Activity Pyramid”

*Direction:* Write down your own activity pyramid, you can use the pictures above as your guide. You can only write the activities/exercises you are actually doing. Copy and answer this to your Study Sheet.

**MY ACTIVITY PYRAMID**
Task 5: Calculating the Training Heart Rate

**Direction:** Copy and answer this to your **Study Sheet.** Get the 60% and 80% of a person ages:

<table>
<thead>
<tr>
<th>Age</th>
<th>60%</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 yrs. Old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 yrs. Old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 yrs. Old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 yrs. Old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 yrs. Old</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What can I Engage In?

Task 6: **CREATING A PERSONAL TRAINING PROGRAM**

**Direction:** Create your own training program using the FITT Principle. Write down only the specific activity that you can do for **Cardiorespiratory Endurance, Muscular Strength or Endurance,** and **Flexibility.** For the Intensity, Time and Type you can refer to the sample provided below. **Copy and answer this to your Study Sheet.**

<table>
<thead>
<tr>
<th><strong>F</strong> FREQUENCY</th>
<th><strong>I</strong> INTENSITY (How long)</th>
<th><strong>T</strong> TIME (How hard)</th>
<th><strong>T</strong> TYPE (How many days a week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CARDIORESPIRATORY ENDURANCE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MUSCULAR STRENGTH OR ENDURANCE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FLEXIBILITY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![FITT Principle Applied to the Components of Fitness](image)
What I Have Learned?

**Task 7:** Copy and answer this to your Study Sheet. What you have learned from the lesson and reflect on the importance on the ways to safeguard participants from possible injuries

*I learned that___________________________________________________________*

*I realized that__________________________________________________________*

Assessment

**Task 8:** POST-TEST

*Direction: Choose the letter of the best answer. Write the chosen letter on your Study Sheet.*

1. Also called as Cancellous bone or trabecular bone, light, porous bone enclosing numerous large spaces that give a honeycombed or spongy appearance.
   - A. Ligament
   - B. Tendons
   - C. Spongy bone
   - D. Bone marrow

2. Is the spongy tissue inside some of your bones, such as your hip and thigh bones. It contains stem cells.
   - A. Ligament
   - B. Tendons
   - C. Spongy bone
   - D. Bone marrow

3. Is a tough band of white, fibrous, slightly elastic tissue.
   - A. Ligament
   - B. Tendons
   - C. Spongy bone
   - D. Bone marrow

4. It connect muscles to bones
   - A. Ligament
   - B. Tendons
   - C. Spongy bone
   - D. Bone marrow

5. Degree of effort put forth by the individual during exercise
   - A. Frequency
   - B. Intensity
   - C. Time
   - D. Type

6. During exercise the muscle cells use oxygen to produce energy for movement.
   - A. Aerobic Exercise
   - B. Anaerobic Exercise
   - C. Frequency
   - D. Intensity

7. During exercise muscle uses up more oxygen than the blood can supply
   - A. Aerobic Exercise
   - B. Anaerobic Exercise
   - C. Frequency
   - D. Intensity

8. Is the number of times your heart beats per minute while at complete rest
   - A. Maximum Heart Rate
   - B. Target Heart Rate
   - C. Resting Heart Rate
   - D. Training Heart Rate

9. Is the minimum number of heartbeats in a given amount of time in order to reach the level of exertion necessary for cardiovascular fitness, specific to a person’s age, gender, or physical fitness.
   - A. Maximum Heart Rate
   - B. Target Heart Rate
   - C. Resting Heart Rate
   - D. Training Heart Rate

10. Is the maximum number of beats made by your heart in 1 minute of effort.
    - A. Maximum Heart Rate
    - B. Target Heart Rate
    - C. Resting Heart Rate
    - D. Training Heart Rate
References

https://www.britannica.com/science/cancellous-bone

https://www.google.com/search?bih=597&biw=1242&hl=en&ei=uNYGX4r2BtD4hwP3oq-QCw&q=bone+marrow&oq=bone+marrow&gs_lcp=CgZwc3ktYWIQARgAMgcIABCxAxBDMgQIABBDMgUIABCxAzIICCAAYBQgAELEDMsgIIADIICCAAVAggAMgIIADoECAAQRzoICAAQBxAKEB46CAgAEAgQBxAcQChAeOgcIABBBDEIsDOgoIABCxAxBDEIsDOgoIABCxAxCDARBDEIsDUJiGGFjyyxhgitgYaAJwAXgDgAGhFYgBgHWSAQo0LTluMi40LjQuMC4ymAEAoEBqgEHZ3dzLXdpergBAg&sclient=psy-ab