FOOTBALL FOR THOUGHT (LEVEL 3)

Description	The project teaches some basics around Football encompassing Physical Education and Nutrition and using simple Math.
Leading Question	What do I need to learn in order to form my dream Football team?
Total Time Required	~5 hours over 3 days
Supplies Required	Paper and pencils
Learning Outcomes	1. Heart Rate and how to measure it 2. Aerobic and Anaerobic respiration 3. General knowledge about Football (pitch & team formations) 4. Balanced diet recommended for football players
Previous Learning	None

DAY 1

Today you will learn about your heart rate and how your body converts food into energy.

Suggested Duration	Activity and Description
15 minutes	• First let's learn about Heart Rate (HR) • The Heart rate is the number of times the heart beats in one minute. HR when we are resting is different than HR when we are moving or exercising. When we run for example, HR increases to supply the muscles with the necessary energy and oxygen. • An athlete needs to pay attention to keep his/her heart healthy and efficient. • To measure your heart rate, you can use any watch or clock with a seconds' counter or a seconds' arm.

- At the wrist, lightly press the index and middle fingers of one hand on the opposite wrist, just below the base of the thumb.
- Count the number of beats in 15 seconds and multiply by four. That's your heart rate.

Source: Harvard Health Publishing

- Now try to measure your Heart rate and note it down.
- Also, measure the Heart rate of one or more other family member and note that down.

10 minutes

- In order to keep your heart healthy, one needs to regularly exercise, but also learn not to over-exercise.
- Maximum Heart rate (MHR) is usually the limit that one must not exceed. Usually it is calculated as 220 minus your age, formula:
- MHR = 220 – Age
- Calculate your MHR.
- To discuss: When do you think a footballer gets close to his/her MHR?
- How do you think regular exercise helps in:
  - Getting the heart more efficient in pumping blood
  - Getting a footballer to sprint faster without crossing the MHR threshold

5 minutes

- Jog in place:
  - Stand up in a space where there is no furniture around.
  - Jog lightly for 1 minute while staying in the same position.
- Measure your HR and note it down.
- Notice that it is more than you HR when you were resting.
- Try to move around for a minute in order to cool down.

5 minutes

- Sprint in place:
  - Stand up in a space where there is no furniture around.
  - Sprint as fast as you can for 10 seconds while staying in the same position.
- Measure your HR and note it down.

	● Try to walk around for 2 minutes in order to cool down. Cooling down means your HR gets back to its resting rate (usually around 60 to 80 beats per minute, and for athletes the resting HR can be 40-50).
30 minutes	● How do our bodies convert food into energy? ● **Respiration** is the process of releasing energy from the breakdown of glucose. Respiration takes place in every living cell; all of the time and all cells need to respire in order to produce the energy that they require. There are two main types of respiration, **aerobic** and **anaerobic:** - Aerobic means "with air". This type of respiration needs oxygen for it to occur, so it is called aerobic respiration. - Oxygen and Glucose are carried to our muscles via the blood, enabling our bodies to move and perform activities like running and kicking the ball. - Anaerobic means without air ("an" means without). When we carry out vigorous exercise, our heart and lungs would not be able to get sufficient oxygen to our muscles in order for them to respire. In this case muscles carry out anaerobic respiration. Anaerobic respiration is not as efficient as aerobic and only a small amount of energy is released. Examples of anaerobic movements are sprinting and jumping. Source: http://passmyexams.co.uk/GCSE/biology/aerobic-and-anaerobic-respiration.html ● **<u>Activity</u>** - Create an infographic showing the definitions of Aerobic and Anaerobic respiration, their corresponding word equations, and examples on each. - Criteria- the infographic must: be on one page, provide all information as briefly as possible, and look pleasant and appealing.
25 minutes	● In this table you will find data from 24 matches of the best teams in the 2014 FIFA world cup in Brazil. They recorded the total distance covered by 64 players in 24 matches.

Table 1. Mean values of the maximum running distances of the best four teams of the 2014 World Cup

No.	Team	Number of players	M distance (metres)	Min. (metres)	Max. (metres)
1.	Germany	14	12,418	6,607	15,338
2.	Netherlands	15	11,664	6,949	13,906
3.	Argentina	17	11,462	5,143	15,012
4.	Brazil	18	11,142	8,481	14,513
Mean for 64 players			11.628		

M – mean; Min. – minimum results; Max. – maximum results.

Source: Central European Journal of Sport Sciences and Medicine | Vol. 11, No. 3/2015: 145–151

- From the above table, what was the overall mean distance covered?

- Let's verify the mean distance from the information provided:

  We know that for Germany's 14 players, mean distance is 12'418m. Similarly, for other teams. To calculate the overall Mean, for each team we multiply the number of players by the mean distance for the team, add all values and divide by the total number of players:

  $$M = \frac{(14\times12418)+(15\times11664)+(17\times11462)+(18\times11142)}{(14+15+17+18)}$$

  Calculate M without using a calculator and verify that your answer is correct from the answer provided in the table (bottom row).

- Can you guess: Which playing position do you think runs the minimum distance in a match?

- Can you guess: Which playing position runs the highest distance? Which position runs the second highest?

- If you were to place players in playing positions in a football team according to their running abilities, where would you position:
  a. The fastest sprinters
  b. Those who have the highest endurance (can run longer distances in a match)

10 minutes

- Reflection questions:

- Compared to your friends or classmates, are you a fast sprinter, someone who runs slower but for longer distances, or someone who does not run much?
- According to your answer, where would you best be positioned?

- The below diagram shows the positions of Goal Keepers, Defense, Midfielders, and Forward. For the Red team, the formation shown below is 3-5-2.
- While for the Blue team, the formation is 4-4-2.

DAY 2

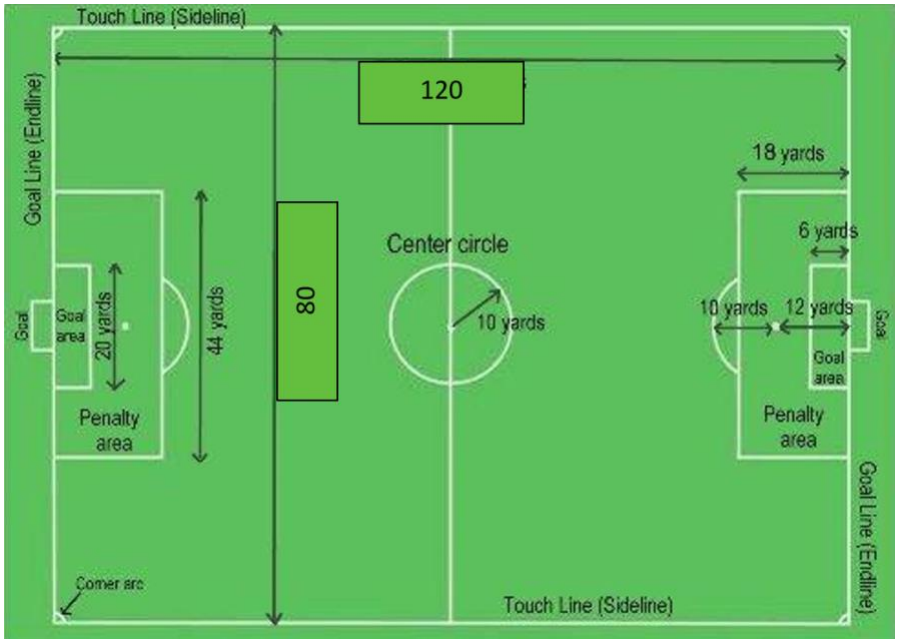
Today you will create your own football team!

Suggested Duration	Activity and Description
10 minutes	● Let's start the session by measuring your HR, then doing an exercise for 1 minute, then measuring the HR again, and walking for a few minutes to cool down and get your HR to its resting mode. - Measure and record your HR. - Perform the Mountain Climber exercise- as shown in the image below- for 1 minute (the version on the left-hand side is more challenging than that on the right).

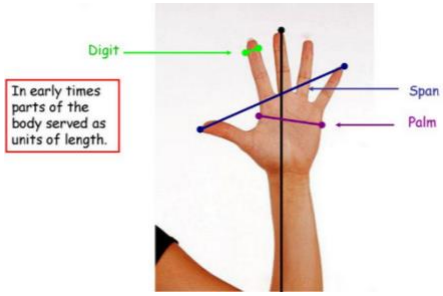
- Measure your HR after the exercise.
- Walk for 5 minutes until you cool down and feel that your HR went back to its resting mode, or as it was before the exercise.

25 minutes

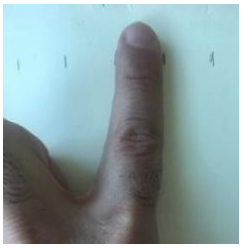
- Now create a model of a football pitch to scale on a A4 piece of paper.



- In order to draw a football pitch to scale, use the scale of 1 digit: 10 Yards.
- A digit is the width of your finger.



- Yards distance on the diagram is be divided by 10 to get the model distance in digits. For example, the length of the pitch on your model is 120 Yards; 120 ÷ 10 = 12. So, count 12 digits using your finger as shown below to draw the length:



- Convert all Yards distances to the corresponding digit lengths for the model, then draw the scale model.

- **Criteria**: The model must be drawn to scale, following the dimensions on the previous diagram, and showing all the white lines and arcs that are usually drawn on a football pitch.

25 minutes

- Team distribution
- To visualize distributions, we need to represent the 11 players of a football team. Try to cut 11 similar rectangular pieces of paper that are around 1 ½ digit by 1 digit. For example, they should measure around 3 cm by 2 cm on your ruler.
- After that, you can use these to try different formations. The different positions are:
  - Goalkeeper (G), who is always in a fixed position
  - Defenders (D)
  - Midfielder (M)
  - Forward (F)
- In Football, the formation is denoted with 3 numbers:
- number of Defenders – number of Midfielders - number of Forward
- **Math problem**: List all possible formations that a football team can have.
- Criteria: you need to assign a number (not zero) for each of D, M &F; such that D+M+F=10.
- How many possible formations can you have?

15 minutes

- The most popular formations in football are **4-4-2**, **4-3-3**, & **4-5-1**.
  - Try to visualize the 4-4-2 formation on your model using the player icons you created.
    - Then, think of the strengths and weaknesses of this formation given the below possibilities:
    - The opponent team is playing with 5 M.
    - The opponent team is playing with 3 F.
    - The opponent team is playing with 5 D.
  - Repeat the above for the other formations: 4-3-3 and 4-5-1

Formation	Strengths	Weaknesses
4-4-2		
4-3-3		

4-5-1		

DAY 3

Today you will continue exercising and present to your family what you've learned.

Suggested Duration	Activity and Description
10 minutes	● Let's start the session by measuring your HR, then doing an exercise for 1 minute, then measuring the HR again, and walking for a few minutes to cool down and get your HR to its resting mode. - Measure and record your HR. - Perform Burpees for 1 minute. Do Full Burpees if you are feeling energetic, otherwise do the Half Burpees, as shown in the image below  - Measure your HR after the exercise. - Walk for 5 minutes until you cool down and feel that your HR went back to its resting mode, or as it was before the exercise.
30 minutes	● Make your dream team: - You will need 1 G, 4 D, 3 to 5 M, and 1 to 3 F.

- Given the simple criteria below for each position, list down names of your friends or classmates – including yourself- for each of the positions:

- G: quick reactions, jumps high, and good catching ability
- D: High endurance, and good defense skills
- M: Highest endurance (able to run for 90 minutes covering the longest distance), accurate long passes
- F: Fastest sprinter, ball control, dribbling, and accurate & fast strikes

Position	Suggested players
G	
D	
M	
F	

- Write the names of suggested players on the rectangular player icons that you created for the model

20 minutes

- Balanced diet for a footballer is:

Food type	Average Diet	Ideal Soccer Players Diet
Carbohydrate	46%	60%
Fat	38%	25%
Protein	16%	15%

- Carbohydrate sources: Fruits, Rice, Pasta and Bread
- Fat sources: Red meat, eggs, dairy, vegetable oils, avocadoes, nuts (almonds, sunflower seeds...), and oily fish
- Protein sources: poultry, fish, lean red meat, eggs, nuts, beans and lentils and soy products.

Source: https://www.sjeb.org/page/show/1225511-soccer-nutrition

	● Questions to think about: - To what extent is your diet balanced as in the average diet mentioned above? - The soccer player diet is for athletes who are practicing daily for long hours which may not be the case for you and your team. Knowing the food habits of your family and friends, what slight changes would you recommend for your team's diet?
20 minutes	● Prepare a presentation showcasing the outcomes of your project: - Infographic about Aerobic and Anaerobic respiration - Your dream team displayed on the Football pitch model with the names of players - Justify your choice of players for the team using the required physical abilities for each position
10 minutes	● Final reflections: - What did you like or appreciate the most about the project? - What would you do or change as a result of this project?

ASSESSMENT CRITERIA

- All observation and task criteria are mentioned respectively.

ADDITIONAL ENRICHMENT ACTIVITIES

- Learners can explore what local foods is usually consumed by athletes or physically active individuals
- What should be the values governing a football team

ADDITIONAL ENRICHMENT ACTIVITIES

- A simple version of this project can be just to draw a model of a football pitch up to scale and come up with a team formation with players selected for each position according to their physical abilities.