



The Physics of Sport!

Your task is to choose a sport and look at it through the eyes of a physicist! You will be presenting your findings to the class in a slideshow. You may work alone or with a partner (paired work means both get the same mark except for oral communication). Although you are using a slideshow presentation, you are required to present orally. You will use text and the internet to research your sport. You are required to properly (APA) cite your sources.

In your slideshow, you must answer the following questions:

- 1) Forces: Identify the ball or object of interest in the game. Find and describe examples of applied force, frictional force, and force of gravity on it and describe how each affects the ball/object. Remember that balanced forces result in constant motion and unbalanced forces result in acceleration.

- 2) Newton's Laws: Is there protective gear or an important piece of equipment used in your sport? Choose one example and describe how one can see Newton's 3 laws in action. I.e: Make specific reference to all 3 laws with regards to the protective gear or piece of equipment.

- 3) Many sports companies (like Nike or Reebok) like to advertise their products as 'cutting edge'. They have research and development (R & D) teams to constantly improve their equipment using science! Using the sample item you chose in #2 above,
 - a) describe how you would strive to improve that item if you were on a R & D team
 - b) describe how you would test it. (What would you keep controlled, what would you vary and what would you measure, how would you determine if your new design is 'better'?)



My Sport: _____

Choose one: I will work alone // with a partner (Name the partner)



Due Date: you must be ready to present in class Tuesday Nov. 3rd.

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge & Understanding C3.1 distinguish between, and provide examples of, different forces (friction, gravity, applied force), and describe the effect of each type of force on the velocity of an object Question #1	Attempts to find & describe examples of forces but there significant errors and/or omissions.	Attempts to find & describe examples of all forces but there some errors and/or omissions.	Find & describe examples of all forces required and correctly describes how each affects ball/object.	Find & describe examples of all forces required & correctly describes how each affects ball/object. Other specific vocabulary used properly: ie:(un)balanced, Fnet, +ve/ -ve acceleration
Application C1.1 analyse, with reference to Newton’s laws, a (sports) technology that applies these laws and [AI, C] Question #2	1 law is correctly related to sport.	2 laws are correctly related to sport.	All 3 laws are correctly related to sport.	All 3 laws are correctly related to sport. Examples given are important parts of game. (not a stretch)
Application C1.1 propose ways to improve its performance Question #3	Attempt made to suggest improvements. Errors in reasoning or significant omissions.	Attempt made to suggest improvements, method of testing. Gaps in analysis.	Improvement is suggested & reasonable method of testing provided.	Improvement is suggested, logical & effective method of testing provided. Design will improve the game; it is not ‘frivolous’
Communication A1.11 communicate ideas... and conclusions ... in electronic presentations, **	Follows few of the ‘rules’ for slide show presentations. Errors affect quality/impact of presentation	Follows some of the ‘rules’ for slide show presentations. Errors affect quality/impact of presentation	Follows most of the ‘rules’ for slide show presentations. Errors are minor & do not affect impact of presentation.	Follows all of the ‘rules’ for slide show presentations.
Communication A1.7 Select, organize, and record relevant information on research topics using academic documentation	1 source chosen and cited. ** APA format is required. If not used, earned mark will be dropped by a level.	2 sources chosen and cited.	3+ sources chosen & cited.	3+ sources chosen, at least one is non-web based, properly recorded in APA format. In text citing used if required.

** Under Generally Helpful Tips on website, there is a powerpoint file on ‘Presentations Tips’ Please view it!