HIGH JUMP: *How do high jumpers set new records?*

The jump style called the "Fosbury Flop" dramatically revolutionized the high jump. Dick Fosbury's movement technique involves racing towards the bar in a curved approach, lifting off with the left foot, pivoting the right leg backwards and sailing over the bar backwards, stretching the back and flipping the legs upwards. In 1968, Fosbury set a personal and Olympic record of seven feet and four inches – a full two and a half inches higher than the 1964 Olympic record. By 1980, 13 of the 16 Olympic high jump finalists used the Fosbury Flop.

All three phases of the high jump require allowing for and using different physical forces. The approach involves accelerating the body along a curved path that leads up to the bar. At that point, the jumper is actually leaning away from the bar, allowing for the centrifugal force that will pull him or her into a vertical position for the jump.

The lift-off requires the jumper to overcome gravity by launching directly upwards while pushing against the ground. The greater the force applied to the ground, the greater the force that returns to the jumper.

Bar clearance requires careful management of the human centre of gravity. The centre of gravity is that point where an object balances perfectly. The force of gravity pulls down vertically and is concentrated at each object's centre of gravity. For an object to remain balanced, the centre of gravity must be on a vertical line with the point of suspension, above or below it. The ideal high jump position involves draping the body over the height of the crossbar at the peak of the jump.

(Taken from http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/newton/high.html)

EXCERCISES

1 **True or false?**

a. Fosbury's Olympic record was three feet higher then the 1964 Olympic record. T F

b. Dick Fosbury's movement technique is not used anymore. T F

c. Bar clearance requires careful management of the human centre of gravity. T F

d. To perform a "Fosbury Flop" you have to lift off with the right foot. T F

2 **Order the "Fosbury Flop" phases.**

..... To perform the "Fosbury Flop" you have to

..... and you can fall down.

..... lift off with the left foot,

..... start racing toward the bar in a curved approach,

..... then pivoting the right leg backwards

..... once you get close enough to the bar you have to

..... stretching the back and flipping the legs upward.

..... you have to sail over the bar backwards,

..... At this point you will find yourself on the other side of the bar

3 **Match questions and answers.**

QUESTIONS		ANSWERS	
A	What is the centre of gravity?	1	The body accelerates along a curved path.
B	Which physics law does the body overcome during the lift off?	2	The centre of gravity is that point where an object balances perfectly.
C	What kind of path does the body follow during the approach phase?	3	Launching directly upwards while pushing against the ground the body overcomes gravity.

A	B	C .....