

Introduction

The trapeze was invented in the 18th century by Leotard, the man who also invented the clothing worn on it, to which he gives his name. The trapeze that Leotard used was very different to the flying trapezes of today, but the principles are the same.

The trapeze itself is basically a horizontal bar, suspended by two vertical cables. Performers usually start by swinging from their arms underneath the trapeze, but the possibility for tricks is endless. They range from the relatively simple knee-hang, where the performer hangs upside from their knees, to twists and somersaults, with the goal being to be caught by someone hanging from a second trapeze.

In this project, I will investigate some of the key principals involved in the trapeze. On a simple level, the trapeze is very similar to a playground swing, and as such can often be modelled as a simple pendulum. The word 'simple' here is misleading, as even though the motion of a pendulum is quite easy to approximate, it is actually impossible to analyse analytically. Not only this, but when analysing human movement, you quickly come across the problem that people are not a fixed shape – they move limbs and bend their bodies. This means that it is often necessary to make very severe approximations in order to simplify calculations that would otherwise be impossible. Despite these simplifications, we are able to draw some conclusions from our data that is directly applicable to the real world.

This project was written when I was in High School as part of some pre-work for my final exams. As with any scientific endeavour, I welcome comments or improvements.

You can contact me through www.flying-trapeze.com.

Alastair