

# Journal of Interdisciplinary Science Topics

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## Hot to Trot – The distance walked by supermodels on the runway, and calories burned over the course of their careers

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19/04/2018

### Abstract

A vital part of modelling is taking part in runway shows. In this paper, the kilometres covered on the runway by three young models (Kendall Jenner, Gigi Hadid, and Kaia Gerber) was determined, and subsequently the calories burned over the course of their careers. It was found that they have walked 1.66, 1.74, and 0.72 km respectively. These three models have also burned 78.98, 83.63, and 31.89 calories on the runway respectively.

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### Introduction

When they are not posing for glossy Vogue editorial spreads, or holding up bottles of ‘eau de parfum’ on our television screens, supermodels walk (as seen in figure 1). Supermodels can run a lot of runways at many different shows during their careers (e.g. the ‘big four’ annual fashion weeks).



Figure 1 – An example of models walking up and down a runway [1].

Walking, as an activity, innately burns calories. In this paper, the total miles walked, and therefore calories burnt by three different millennial supermodels – Kendall Jenner, Gigi Hadid, and Kaia Gerber – will be determined. Kendall Jenner hails from the Kardashian-Jenner clan, and walked her first show for Sherri Hill, New York Fashion Week in 2011 [2]. Gigi Hadid, daughter of Yolanda Hadid (former model and reality TV star), was named International Model of

the Year by the British Fashion Council [3]. Kaia Gerber, the youngest of the three, is the daughter of Cindy Crawford, arguably the most iconic model of all time [4].

### Distance walked

The length of the runway varies from show to show, from the longer Burberry show in London Fashion Week 2015 (showcasing more experienced models) which was 147 feet, to much smaller runways at less commercial events [5]. However, the average runway is 28 feet long, or 0.0085344 km [6]. A model must walk the length of the runway twice, so they would therefore have to walk 56 feet on average. Although models will sometimes walk multiple times in the same show, it will be assumed that each model walks only once in any particular show. Additionally, not all runways involve walking back and forth on the same strip (the entrance and exit is the same); some have peculiar designs that have different entry and exit points. However, it will be assumed that the average runway in consideration is a linear strip where the points of entry and exit are the same. The miles walked can be seen in table 1.

### Calories burned

The number of calories burned by an individual while walking depends on a few major factors: weight, distance walked, steepness of surface, and speed [9]. The runway is a level surface.

Name of model	Number of shows walked	Feet walked	Kilometres walked
Kendall Jenner	98	5488	1.66
Gigi Hadid	102	5712	1.74
Kaia Gerber	42	2352	0.72

Table 1 – Number of shows, feet, and therefore kilometres walked by the three models being focused on [7-9].

Equation 1 can be used to calculate calories burned (kcal) on a level surface [10]:

$$\text{Calories burned} = (0.0215v^3 - 0.1765v^2 + 0.8710v + 1.4253) \times m \times t, \quad (1)$$

where  $v$  is the speed at which supermodels walk (in kilometres per hour). It will be assumed that each model walks on the runway at a speed of 3 mph, or 4.83 kph; this is based on an estimation based on observing videos of models walking in shows [11, 12]. The time taken for each model to walk the total number of runways in their career (hours) is given by  $t$ ; this was calculated by substituting the total distance walked (table 1), and speed into equation 2. The mass of each model in kilograms is given by  $m$ ; although models showcase different clothes during fashion shows (which add varying masses), solely their body masses will be considered.

$$t_{total} = \frac{d_t}{v} \quad (2)$$

Where  $t_{total}$  is the total time accumulated on the runway,  $d_{total}$  is the total distance walked and  $v$  is the speed at which supermodels walk (in kph) as before. Therefore, the calories burned by each model can be calculated. The values can be seen in table 2.

Name of model	Weight (kg)	Time on the runway over career (hours)	Distance walked (km)	Calories burned (kcal)
Kendall Jenner	59	0.34	1.66	78.98
Gigi Hadid	59	0.36	1.74	83.63
Kaia Gerber	54	0.15	0.72	31.89

Table 2 – A summary of each model, including their weight, number of shows walked, and total calories burned over their career. Speed is assumed to be 4.83 kph.

Kendall Jenner, who weighs 59 kg, has burned 78.98 calories over the span of her career. Gigi Hadid (59 kg), has burned 83.63 calories. Kaia Gerber (54 kg) has burned 31.89 calories.

### Conclusion

Kendall Jenner, Gigi Hadid, and Kaia Gerber have walked 1.66, 1.74, and 0.72 km and burned 78.98, 83.63, and 31.89 calories respectively on the runway over the course of their modelling career.

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