

# 2012 年臺灣國際科學展覽會

## 優勝作品專輯

國家：South Africa

編號：090019

### 作品名稱

**BMI: BODY MASS INDEX or BELGIUM  
MATHEMATICIAN'S INVENTION ?**

### 得獎獎項

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# **Abstract**

## **Purpose**

Although Body Mass Index (BMI) is accepted by the World Health Organisation (WHO) as the standard method of measuring a person's obesity or lack thereof, it is restriction to the two measurements of height and weight. This makes its accuracy questionable. By using other easily obtainable body measurements, a better way of evaluating Body Mass Index is possible.

The purpose of this project was to show that the BMI formula is only accurate to a certain degree and that its validity varies depending on certain factors used in my project.

## **Procedure**

50 Adolescent female aged 16-20 and 50 women aged 40-56 none of whom were noticeably obese or underweight volunteered. Using a simple questionnaire, several measurements were taken – age in months, caliper measurement of tricep and hip bone, shoe size, height in metres, hip waist and wrist measurements (cm), exercise per week, heart rate and body type.

Results were tabulated and graphs drawn using EXCEL. BAI (Body Adiposity Index) measurements were calculated for all volunteers.

## **Results**

The girls and women with pear and hourglass figures were classified by BMI as overweight or obese. The girls and women who exercised a lot were also unfairly classified by their BMI readings. Many of the graphs show that BMI is not accurate,

however, others show that there is merit to the formula.

### **Conclusions**

The results while interesting require a larger sample group to be conclusive. It would appear that the BMI formula needs to be extended in order to improve its accuracy.

Further research includes:

1. Larger sample group,
2. Representative age groups,
3. Investigate males,
4. Look at data for different ethnic groups,
5. Research into BAI formula as a possible substitute,
6. Develop an improvement on BMI.

Although, there is some merit to BMI formula, it could be greatly improved with the use of other measurements including those used in this project.

## 評語

1. This is a very interesting study.
2. The study group is still small, need to increase the study site.
3. Various age groups should be taken into consideration.