

Athletics Problem: Does Body Size Match Athletics Ability?: Problem Handouts



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Athletics Problem: Does Body Size Match Athletics Ability?

Problem Statement

Summer is on the horizon and tomorrow is the last day of school at JC Watts Elementary. The last day of school means one thing to all students... field day. Each year students look forward to competing against peers one year older or younger than they are. There are three separate age group categories for Watts Field Day: Kindergarten-1st, 2nd-3rd, and 4th-5th. Field day is an entire day in which students take part in several competitions for fun. Younger students, grades K-1 and 2-3, compete in activities such as blowing up a balloon, eating blueberry pie, tug of war, and an egg toss. Older students, grades 4-5, compete in track and field activities. For instance, grade 4-5 students compete in the long jump, shot put, hurdles, high jump, 100 meters, 200 meters, 400 meters, 800 meters, the mile, and the two mile.

The Watt's physical education teacher, Mr. Finley, has students practice these events to prepare for field day. He thinks that students with certain body types appear to do well in certain events. As an example, it's been his experience that students with significant height often do better at the high jump than students with less height. Students with minimal weight often fare well in the endurance or distance events like the mile and two mile.

Mr. Finley is seeking some sort of method to determine whether or not he can look at a student and decide the optimal event for the student. As an example, can Mr. Finley simply look at a student and say, "You should be a good shot putter and you should be a good two-miler", without even seeing the student perform any events? He has been perplexed by this thought for some time. He has actually collected some informal data. However, he feels that using data on future and current United States Olympic athletes would be more accurate than his data. USATF, United States of America Track and Field, is an organization that governs and funds Olympic athletes throughout the United States.

Using data from a website (e.g. www.usatf.org/athletes/bios/ or www.indianainvaders.com/athletes/), is it possible to look at an athlete's height and weight, without knowing what event they do, and predict what event the athlete will do best? To select an athlete, simply click on the name and the vital statistics, such as event, weight, and height, will appear.



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Height and Weight Data for USATF

MEN

| Athlete | Event | Height in inches | Weight in pounds |
|-------------|-----------------|------------------|------------------|
| Abdi A | Distance | 71 | 130 |
| Dominique A | 110 H | 73 | 190 |
| Kenta B | TJ | 72 | 170 |
| Jamie B | SP | 72 | 270 |
| Ron B | 110 H | 71 | 165 |
| Derrick B | 400 | 73 | 175 |
| Tim B | Middle Distance | 71 | 154 |
| Carl B | Discuss | 76 | 255 |
| Joel B | 110 H | 70 | 165 |
| Christian C | SP | 77 | 300 |
| James C | 400H | 72 | 190 |
| Xavier C | Sprints | 75 | 170 |
| Brian C | Javelin | 73 | 205 |
| Curt C | Race Walk | 74 | 175 |
| Bryan C | Decathlon | 71 | 185 |
| Kerron C | 400 H | 74 | 184 |
| Shawn C | Sprints | 71 | 165 |
| Alan C | Distance | 73 | 130 |
| Walter Da. | Jumps | 72 | 185 |



| | | | |
|------------|-------------------|------|-----|
| Walter Di. | Sprints | 69 | 190 |
| Ian D | Middle Distance | 74 | 150 |
| Matt D | Distance | 71 | 145 |
| Phillip D | Race Walk | 69 | 132 |
| Kevin E | Race Walk | 73 | 170 |
| Anthony F | 3000S | 59 | 127 |
| Kenneth F | 400H | 74 | 165 |
| Jake F | HT | 79 | 320 |
| Tyson G | Sprints | 71 | 165 |
| John G | SP/Discus | 76 | 290 |
| Adam G | Middle Distance | 70 | 138 |
| Maurice G | Sprints | 69 | 180 |
| Breaux G | Javelin | 74.5 | 230 |
| Charlie G | 1500 | 72 | 155 |
| Ryan Hal. | 5,000 | 70 | 130 |
| Ryan Har. | Decathlon | 75 | 197 |
| Jebreh H | 800 | 70.5 | 148 |
| Jeff H | PV | 75 | 185 |
| Matt H | HJ | 79 | 195 |
| John H | Javelin | 73 | 230 |
| Kevin H | 800 | 68 | 150 |
| Reese H | SP | 72 | 253 |
| Nick H | PV | 73 | 180 |
| Bershawn J | 400H | 68 | 158 |
| Mark J | 100/200 (sprints) | 67 | 150 |
| Allen J | 110H | 70 | 165 |



| | | | |
|-------------|-----------------|----|-----|
| Brian J | LJ | 77 | 200 |
| Kibwe J | Throws | 74 | 238 |
| Marcus J | TJ | 76 | 190 |
| Mebrahtom K | Distance | 67 | 127 |
| Max K | Steeple | 66 | 135 |
| David K | Middle Distance | 74 | 170 |
| Alfred K | HT | 76 | 260 |
| Bernard L | 1500-5000 | 69 | 134 |
| Kyle L | HJ | 77 | 180 |
| Daniel L | Steeple | 75 | 160 |
| Chris L | 1500 | 68 | 130 |
| Jason L | 1500 | 74 | 160 |
| Tim M | PV | 74 | 175 |
| Casey M | Discus | 80 | 240 |
| Scott M | 1500 | 75 | 160 |
| Phil M | Decathlon | 76 | 202 |
| LeShawn M | 400 | 74 | 182 |
| Derek M | PV | 75 | 190 |
| Jeremy M | 800 | 76 | 175 |
| Keith M | HJ | 80 | 185 |
| John M | Jumps | 73 | 155 |
| Rob M | 1500 | 68 | 135 |
| Adam N | SP | 72 | 255 |
| Jamie N | HJ | 76 | 185 |
| John N | Race Walk | 73 | 170 |



| | | | |
|------------|-----------------------------|----|-----|
| Brian O | Steeple | 67 | 125 |
| James P | HJ | 72 | 245 |
| Miguel P | LJ | 74 | 190 |
| Derrick P | 800 | 71 | 160 |
| Dwight P | LJ | 71 | 180 |
| Dathan R | 10,000 | 68 | 117 |
| Michael R | Discus | 76 | 300 |
| Khadevis R | 800 | 72 | 160 |
| Andrew R | 400 | 73 | 175 |
| Jarred R | Discus | 76 | 300 |
| Galen R | Middle Distance/Distance | 71 | 138 |
| Leonard S | Sprints | 71 | 178 |
| Tim S | Race Walk | 69 | 135 |
| Brian S | Marathon | 70 | 140 |
| Ray S | Race Walk | 72 | 178 |
| Ryan S | Distance | 70 | 155 |
| Tommy S | PV | 74 | 170 |
| Steve S | Steeple | 70 | 145 |
| Wallace S | 200 | 75 | 175 |
| Toby S | PV | 73 | 180 |
| Nick S | 800/1500 | 70 | 165 |
| Dan T | SP | 78 | 325 |
| Paul T | Decathlon | 74 | 194 |
| Jorge T | Middle Distance | 67 | 145 |
| Terrence T | 110H/100 | 74 | 186 |



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|----------|-----------------|----|-----|
| Brad W | PV | 74 | 185 |
| Ian W | Discus | 74 | 265 |
| Jeremy W | 400 | 72 | 155 |
| Tyree W | 400 | 72 | 180 |
| Alan W | Middle Distance | 69 | 145 |
| Jesse W | HJ | 72 | 155 |
| Darold W | 400 | 74 | 170 |
| Aarik W | Jumps | 75 | 195 |

WOMEN

| Athlete | Event | Height in inches | Weight in pounds |
|------------|-----------------|------------------|------------------|
| Amy A | HJ | 74 | 145 |
| Erin A | HJ | 73 | 148 |
| Fiona A | Heptathlon | 68 | 135 |
| Me'Lisa B | 100 | 63 | 125 |
| Candice B | TJ | 65 | 155 |
| Becky B | Throws | 71 | 220 |
| Amber C | HT | 67 | 200 |
| Michelle C | SP | 69 | 210 |
| Hazel C | 800 | 70 | 128 |
| Treniere C | 800/1500 | 63 | 112 |
| LaTasha C | Sprints | 65 | 130 |
| Shayne C | Middle Distance | 65 | 112 |
| Angela D-B | Sprints | 63 | 128 |



| | | | |
|------------------|-----------------|----|-----|
| Brittany D | Jumps | 73 | 135 |
| Sharon D | HJ | 68 | 145 |
| Lashinda D | 400H | 67 | 136 |
| Colleen D | Distance | 65 | 104 |
| Gail D | 100H/100 | 63 | 121 |
| Joanne D | Race Walk | 68 | 132 |
| Stacy D | PV | 67 | 140 |
| Elva D | Distance | 68 | 110 |
| Torri E | Sprints | 64 | 127 |
| Suzy F-H | Middle Distance | 64 | 108 |
| Allyson F | 200 | 66 | 125 |
| Shalane F | Middle Distance | 65 | 113 |
| Lauren F | Middle Distance | 68 | 122 |
| Hyleas F | Heptathlon | 67 | 140 |
| Lisa G | Steeple | 63 | 115 |
| Lindsey G | 1500 | 65 | 105 |
| Erin G | HT | 70 | 200 |
| Brianna G | Sprints/LJ | 66 | 125 |
| Sandra G | 400H | 68 | 130 |
| Bethany H | HT | 68 | 160 |
| Joanna H | 100H/400H | 66 | 130 |
| Kristin H | SP | 72 | 275 |
| Monique Hend. | 400 | 67 | 118 |



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|---------------|-----------------|----|-----|
| Monique Henn. | 400 | 69 | 130 |
| Chaunte H | HJ | 69 | 131 |
| Elizabeth J | Steeple | 67 | 116 |
| Sheena J | 400H | 65 | 128 |
| Ifoma J | HJ | 66 | 134 |
| Lolo J | 100H | 69 | 150 |
| Marion J | Sprints/LJ | 71 | 155 |
| Deena K | Distance | 64 | 104 |
| Anjanette K | 100H | 68 | 145 |
| Kim K | Javelin | 69 | 168 |
| Kris K | Discus | 73 | 200 |
| Muna L | Sprints | 67 | 109 |
| Tianna M | LJ | 66 | 128 |
| Sarah M | Javelin | 67 | 155 |
| Erica M | TJ | 67 | 137 |
| Katie M | Distance | 66 | 120 |
| Akiba M | LJ | 63 | 126 |
| Tiffany M | Distance | 68 | 128 |
| Carrie M | LJ | 63 | 118 |
| Virginia M-J | Distance | 65 | 142 |
| Amy M | Middle | 69 | 131 |
| Tracy O | PV | 67 | 125 |
| Michelle P | 100H/Heptathlon | 68 | 146 |



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|-------------|-----------------------------|----|-----|
| Dana P | Javelin | 62 | 140 |
| Virginia P | 100H | 69 | 157 |
| Jen R | Distance | 63 | 105 |
| Sanya R | 400 | 68 | 136 |
| Rose R | LJ | 66 | 137 |
| Moushaumi R | 400 | 67 | 132 |
| Amy R | Middle | 69 | 125 |
| Marla R | Middle Distance/Distance | 68 | 118 |
| Blake R | Distance | 65 | 107 |
| Mary S | PV | 64 | 130 |
| Sarah S | 1500 | 65 | 105 |
| Jillian S | PV | 68 | 138 |
| Rachelle S | 200 | 64 | 126 |
| Shauna S | 400H | 69 | 140 |
| April S | PV | 69 | 130 |
| Jenn S | PV | 72 | 141 |
| Seilala S | Throws | 70 | 238 |
| Kellie S | PV | 67 | 128 |
| Brenda T | 400H | 69 | 140 |
| Aretha T | Discus | 70 | 235 |
| Carrie T | Middle Distance | 69 | 120 |
| Jen T | Middle Distance | 65 | 113 |
| De'Hashia T | 400 | 70 | 140 |



| | | | |
|--------------|-----------------|----|-----|
| Grace U | LJ | 68 | 130 |
| Teresa V | Race Walk | 65 | 108 |
| Elizabeth W | SP | 71 | 235 |
| Nicole W | TJ | 67 | 125 |
| Laurn W | 100 | 62 | 127 |
| Tiffany W | 100H/400H | 62 | 126 |
| Christin W-T | Middle Distance | 65 | 120 |

KEY TO EVENTS

Running Events

100=100 Meters

100H=100 Meter Hurdles (women's event)

110 H=110 Meter Hurdles (men's event)

200=200 Meters

400=400 Meters

400 H=400 Hurdles

800=800 Meters

1500=1500 Meters

3000=3000 Meters

3000S=3000 Meter Steeplechase

5000=5000 Meters

10000=10000 Meters

Field Events



Decathlon=Decathlon (men's event)

Discus=Discus

Distance=Distance

Heptathlon=Heptathlon (women's event)

HJ=High Jump

HT=Hammer Throw

J=Javelin

LJ=Long Jump

Middle Distance=Middle Distance

PV=Pole Vault

Race Walk=10,000 Meter or 20,000
Meter Race Walk

SP=Shot Put

TJ=Triple Jump

*Several individuals compete in more than one event and they have decided to create a general category, such as sprints, middle distance, or distance

Sprints=100, 200, and/or 400

Middle Distance=800 & 1500

Distance=5,000, 10,000 and marathon

Throws=any combination of shot put, discus, or hammer throw

Jumps=Long Jump and Triple Jump



SOURCE:

<http://www.usatf.org/athletes/bios/>

