

What is Biomechanics?

Biology: a branch of knowledge that deals with living organisms...

Mechanics: the study of forces and their effects on objects...

Physics

Mechanics

Other branches of physics

Statics

Dynamics

Kinematics

Kinetics

Biomechanics: The effects of forces on living organisms (animals, plants, and humans)

Why biomechanics?

According to our text, biomechanics can improve performance three avenues

- Training Improvement
- Technique Improvement
- Equipment Improvement

However, there is much, much more to this exciting field...



Feline Locomotion
(Shik, 1966)

Cockroach gastroc loading
(Pearson, 1972)

Guinea Fowl Locomotion
(Daley et al., 2007).

POST-HIBERNATION BLACK BEARS (BRS) AMERICANS DO NOT DEMONSTRATE CORTICAL BONE LOSS COMPARED TO PRE-HIBERNATION BEARS DESPITE 6 MONTHS OF DISEUSE

Meghan E. McGee¹, Lindsay N. Barlow¹, Kirsten J. Sisco¹, Samantha J. Wright, Janice Avger², Hal L. Black¹, Seth W. Donohue²

¹Department of Biomedical Engineering, Michigan Technological University, Houghton, MI, USA, www.bme.mtu.edu

²Department of Integrative Biology, Brigham Young University, Provo, UT, USA

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VELOCITY DISPERSION IN A CLUSTER OF STAIRS HOW FAST COULD USAIN BOLT HAVE BEEN?
H. K. Ezzamel^{1,2}, J. B. Kramarow^{1,2}, D. L. Lussier^{1,2} and I. E. Ward^{1,2}

ABSTRACT
There that very memorable day at the Beijing 2008 Olympics, a big question on every sports commentator's mind was: "How much faster could Usain Bolt have been than that Usain Bolt we saw obliterate at the end of the race?" Can Bolt, Bolt's coach, or a team of biomechanists tell us that the time could have been 9.58 seconds or better? We asked this question by determining Bolt's position as a function of time using footage of the race, and then extrapolate into the last two seconds based on different assumptions. First, we conservatively assume that Bolt would have maintained his stride frequency, and then we assume that he would have increased his stride frequency at the end of the race. Second, based on the time dispersion prior to the celebration, we assume that he could also have kept an acceleration of 2.5 m/s² higher than throughout. In these two cases, we find that the time could have been 9.44 s (9.44 and 9.33 s in two seconds, respectively), when the acceleration during the celebration was 2.5 m/s² instead of zero.

Subject headings: popular science — image analysis — Beijing 2008

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