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Sport and exercise biomechanics

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Abstract

Biomechanics is the study of the structure and function of biological systems such as humans, animals, plants, organs, fungi, and cells by means of the methods of mechanics. Sport and Exercise Biomechanics is a title that encompasses the area of science concerned with the analysis of mechanics of human movement. In other words it is the science of explaining how and why the human body moves in the way that it does. In sport and exercise that definition is often extended to also consider the interaction between the performer and his or her equipment and environment. Biomechanics is traditionally divided into the areas of kinetics (concerning the analysis of the forces acting on the body) and kinematics (concerning the analysis of the movements of the body).

Keywords: Sport and exercise biomechanics

Introduction

Biomechanics is the study of the structure and function of biological systems such as humans, animals, plants, organs, fungi, and cells by means of the methods of mechanics. Sport and Exercise Biomechanics is a title that encompasses the area of science concerned with the analysis of mechanics of human movement. In other words it is the science of explaining how and why the human body moves in the way that it does. In sport and exercise that definition is often extended to also consider the interaction between the performer and his or her equipment and environment. Biomechanics is traditionally divided into the areas of kinetics (concerning the analysis of the forces acting on the body) and kinematics (concerning the analysis of the movements of the body).

The following are the some examples of the areas where Biomechanics is applied to either support performers or solve issues in sport or exercise:

- The identification of the optimal technique for enhancing sports performance
- The analysis of body loading to determine the safest method for performing a particular sport or exercise task
- The assessment of muscular recruitment and loading
- The analysis of sport and exercise equipment e.g., shoes, surfaces and racquets.

Biomechanists are generally involved in attempting to either enhance performance or reduce the injury risk in the sport and exercise tasks examined.

Biomechanics is the mathematics of technique. An understanding of biomechanics enables you to understand perfect technique of just about any sporting activity. He we explain in simple terms the laws of physics as they relate to sport.

Linear Motion

Linear motion simply means motion in a straight line (as opposed to circular motion or rotation). In order to talk about linear motion scientifically we need to be familiar with mass, distance, displacement, speed, velocity and acceleration. Here we explain Newton's laws of motion, mass, inertia, momentum, speed, velocity, distance, displacement and graphs of motion.

Forces

A force is a push or a pull which alters the state of motion of a body and is measured in

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Newtons (N). Here we cover balanced and unbalanced forces, friction, air resistance, impulse, force time graphs and free body diagrams.

Angular Motion

Angular momentum includes rotating bodies, levers, stability, moment of force / torque, axis of rotation, moment of inertia and angular momentum.

Fluid Mechanics

Fluid mechanics or fluid dynamics comes into sport a lot and covers air resistance, drag, projectiles, spin on balls and Bernoulli principle and lift force.

Applications

The study of biomechanics ranges from the inner workings of a cell to the movement and development of limbs, to the mechanical properties of soft tissue, and bones. Some simple examples of biomechanics research include the investigation of the forces that act on limbs, the aerodynamics of bird and insect flight, the hydrodynamics of swimming in fish, and locomotion in general across all forms of life, from individual cells to whole organisms. The biomechanics of human beings is a core part of kinesiology. As we develop a greater understanding of the physiological behavior of living tissues, researchers are able to advance the field of tissue engineering, as well as develop improved treatments for a wide array of pathologies.

Conclusion

Biomechanics is the study of the structure and function of biological systems such as humans, animals, plants, organs, fungi, and cells by means of the methods of mechanics. Sport and Exercise Biomechanics is a title that encompasses the area of science concerned with the analysis of mechanics of human movement. In other words it is the science of explaining how and why the human body moves in the way that it does. In sport and exercise that definition is often extended to also consider the interaction between the performer and his or her equipment and environment. Biomechanics is traditionally divided into the areas of kinetics (concerning the analysis of the forces acting on the body) and kinematics (concerning the analysis of the movements of the body).

References

1. <http://www.teachpe.com/biomechanics/>
2. <http://www.bases.org.uk/Biomechanics>
3. Bartlett, Roger. Introduction to sports biomechanics (1 ed.). New York, NY: Routledge, 1997, 304. ISBN 0-419-20840-2.
4. Michael Yessis. Secrets of Russian Sports Fitness & Training, 2008. ISBN 978-0-9817180-2-6.