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Editorial

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Using Biomechanics to Design Rehabilitation Programs and Equipment

Farzam Vazifehdan

Hiedelberg University, Stuttgart, Germany

Editorial:

Biomechanics is that the science of movement of a living body, including how muscles, bones, tendons, and ligaments work together to supply movement. Biomechanics is a component of the larger field of kinesiology specifically that specialize in the mechanics of the movement.1 it's both a basic and engineering, encompassing research and practical use of its findings. Biomechanics includes not only the structure of bones and muscles and therefore the movement they will produce, but also the mechanics of blood circulation, renal function, and other body functions. The American Society of Biomechanics says that biomechanics represents the broad interplay between mechanics and biological systems. Biomechanics studies not only the human body but also animals and even extends to plants and the mechanical workings of cells.3 For example, the biomechanics of the squat includes consideration of the position and/or movement of the feet, hips, knees, back, and shoulders, and arms. Dynamics: Studying systems that are in motion with acceleration and deceleration Kinematics: Describing the effect of forces on a system, motion patterns including linear and angular changes in velocity over time also as position, displacement, velocity, and acceleration are studied. Kinetics: Studying what causes motion, the forces, and moments at work Statics: Studying systems that are in equilibrium, either at rest or moving at a constant velocity. Sports biomechanics studies human motion during exercise and sports. Physics and therefore the laws of mechanics are applied to athletic performance. Here are some various uses for biomechanics. Equipment: Biomechanics are often utilized in the planning of sporting goods, clothing, shoes, and therefore the fields and facilities where sports are played.

For example, shoes are often designed for the simplest performance for a middle-distance runner or a racket for the simplest grip. Individuals: Biomechanics are often applied to individuals, analyzing their movements and training them for simpler movement during exercise and sports movement. For example, an individual's running gait or golf swing is often filmed and proposals made for them to vary and improve it. Injuries: Biomechanics are often applied to studying the causes, treatment, and prevention of sports injuries. The research can analyze the forces at work which will cause an ankle sprain and the way shoe design or the playing surface might reduce the danger of injury. Training: Biomechanics can study sports techniques and training systems and develop ways to form them more efficient. This can include basic research into how hand position affects propulsion in swimming. It can propose and analyze new training techniques supported the mechanical demands of the game, aimed toward leading to better performance. Biological science: Studies of human, animal, cell, and plant biomechanics. Engineering and applied science: Applying the research of biomechanics to varied situations. Ergonomics and human factors: Using biomechanics in human-machine interfaces, workplace, and functional designs and processes. Health sciences: Researching causes, treatment, and prevention of injury and using biomechanics to design rehabilitation programs and equipment.