



National Biomechanics Day Philosophy and Mission



Biomechanics investigates the broad expanse of biology in the physical world and it makes substantial contributions to basic biology, medicine and health, human and animal movement and performance, biomedical engineering, prosthetics and human-machine interactions, among many other endeavors. **Biomechanics helps people and it improves the quality of human life.** Despite this significance and its great potential, Biomechanics remains in a nascent state. It has yet to fully breakthrough into our society's consciousness. For this reason, **National Biomechanics Day seeks to expand the influence and impact of Biomechanics on our society.** The mechanism through which NBD will manifest this goal is by teaching young people about Biomechanics and thereby expand the number of people entering Biomechanics and creating careers in Biomechanics. These careers will vary greatly and may include Biomechanics science but may also include the practical application of Biomechanics in commercial, medical, industrial, and other settings. As the number of Biomechanists increases, so will our impact on society as well as society's understanding and appreciation of Biomechanics. **By achieving these goals, we will make Biomechanics the, "breakthrough science of the 21st century."** It stands on the precipice but it has not yet made this leap.

This mission is eminently attainable because of existing social pressures including the continuing growth of STEM and STEAM educational models, the accessibility of Biomechanics to underserved populations through diversity, equity and inclusiveness initiatives, and the inherent and deep-seated humanity within Biomechanics science and Biomechanics applications. Also, without doubt, Biomechanics is fun for young people. Biomechanics is the fundamental combination of all things STEM. It is science, technology, engineering, and math

and with the advent and continuing growth of Dance Science it is now STEAM with A for Arts. Biomechanics can readily place itself as a foundational component to STEM/STEAM education because of our, “All Things STEM & STEAM,” nature. Biomechanics has served as the centerpiece of STEM grants through the National Science Foundation (NSF) and with continued efforts, NSF among other groups can be made to better understand and value Biomechanics as an effective mechanism for entry into science by young people, indeed, as the STEM/STEAM entry mechanism.

National Biomechanics Day has had tremendous success in reaching diverse and underserved populations and it is enacting extensive initiatives to expand this success. Among these initiatives, we created a DE&I section on the NBD Organizing Committee, we joined with the Diversity Committee and Diversity Chairperson, Dr. Robin Queen of the American Society of Biomechanics and with ASB Fellows working to increase DE&I in Biomechanics and science, and we work with 4th Family, a non-profit organization dedicated to empowering and educating community members to reach for success through science. Working with these people and groups will enable NBD to reach all young people and help them sustain their drive for success in science. National Biomechanics Day is participating in other outreach activities designed to increase DE&I in our world of science.

Young people like biomechanics for many reasons including the fact that its techniques are the basis for all video games played today. When they see, “mo-cap,” in real life ([Click HERE](#)), they are excited by it. **Biomechanics then becomes science with purpose for high school youngsters because they participate in it; biomechanics is the science of people moving and performing our daily activities and enjoyable sporting and athletic activities.** All NBD events and activities involve young people performing isokinetic tests, or EMG tests, or mo-cap tests, or so many other living-science activities. The end result after each and every NBD test is amazement and awe in young people...



Two high school students at the Nike NBD 2017 event in Beaverton, Oregon. One shows amazement and one shows awe, we just cannot distinguish which is which!

...and a lotta smiles in Brazil and Malaysia in 2019,



Biomechanics can be irresistible to young people and NBD will reveal this irresistibility to them. Biomechanics and NBD are fun for young people. Indeed, our motto has been from the beginning, “Science meets fun on National Biomechanics Day.”

National Biomechanics Day also recognizes the contributions of so many Biomechanists around the world who conduct other educational outreach activities. These demonstrations are exciting and productive and they also lead to many of the NBD goals. Some of these activities are even combined with NBD events. NBD however, has one element not seen in other Biomechanics outreach. **NBD is ALL OF US working together in a synchronized celebration of Biomechanics**, a coordinated, worldwide Biomechanics festival. This unity is the true, underlying greatness of National Biomechanics Day. Together, we become the irresistible force that thrills young people. They know NBD is occurring, “everywhere,” and this knowledge enhances the meaning and importance of National Biomechanics Day, of Biomechanics, and of the possibility that a single young person can choose a meaningful and enjoyable career in Biomechanics.

We close with the proposition that doing Biomechanics is not enough to make Biomechanics the Breakthrough Science of the 21st Century. While it may breakthrough on its own at some time, it is clear that Biomechanics has yet to become universally known and appreciated. While doing Biomechanics is certainly the foundation of our breakthrough, **we must also show Biomechanics to people**. Do you not wonder why, after so many decades of incredible Biomechanics, Biomechanics remains the unknown science, unknown even in this information age? Why is Biomechanics not listed among literally hundreds of sciences, activities, degree fields and careers in STEM, when it is in fact fully STEM? Where are the Biomechanics journals with impact factors of 10, 20, and 30? The answer is that we have shuttered ourselves into post-graduate programs that simply do not reach the broad population. We remain a distant and underappreciated science to most university undergraduate students and to most people. We need to take the simple step of saying, “Hello, this is Biomechanics,” to young, high school students. NBD takes this step. National Biomechanics Day looks forward to the NBD inclusive of all Biomechanists stepping irresistibly into society’s consciousness.

Please see this essay to further understand the need for NBD and why we think Biomechanics is on the edge of breaking through [Click Here](#).

The National Biomechanics Day website is [Here](#).

