

# UC Berkeley

## Berkeley Scientific Journal

**Title**

Run Like The Wind (Or Faster, If You Can)

**Permalink**

<https://escholarship.org/uc/item/6n21k8jn>

**Journal**

Berkeley Scientific Journal, 13(1)

**ISSN**

1097-0967

**Author**

Ma, Melanie

**Publication Date**

2009

**DOI**

10.5070/BS3131007612

**Copyright Information**

Copyright 2009 by the author(s). All rights reserved unless otherwise indicated. Contact the author(s) for any necessary permissions. Learn more at <https://escholarship.org/terms>

Peer reviewed|Undergraduate

# RUN LIKE THE WIND (OR FASTER, IF YOU CAN)

Melanie Ma



For a steady two-week period in August 2008, the citizens of the world witnessed a truly incredible Summer Games of the XXIX Olympiad. The lighting of the Olympic torch marked the commencement of one of the most political-

ly charged and highly anticipated Olympic Games to date. Although only four years had passed since the Games in Athens, numerous technological devices developed in this short period of time helped to transform the training process and subsequently the performance of athletes in various Olympic sports. While the basic premise of technological development is to continually improve the state of current technology, is there such a thing as going too far? The Olympic Games were originally created by the Ancient Greeks to determine which man possessed the greatest athletic prowess; the original competitors never envisioned a world with light reflecting contact lenses and muscle relaxing tape. The overuse of technology nowadays has created an uneven playing field at the Olympic Games, possibly altering the outcome of the competitions.

*“15 out of the 16 gold medal winners wore the LZR, a statistic which implies that swimmers who failed to wear the suit might have put themselves at a severe disadvantage.”*

ly charged and highly anticipated Olympic Games to date. Although only four years had passed since the Games in Athens, numerous technological devices developed in this short period of time helped to transform the training process and subsequently the performance of athletes in various Olympic sports. While the basic premise of technological development is to continually improve the state of current technology, is there such a thing as going too far? The Olympic Games were originally created by the Ancient Greeks to determine which man possessed the greatest athletic prowess; the original competitors never envisioned a world with light reflecting contact lenses and muscle relaxing tape. The overuse of technology nowadays has created an uneven playing field at the Olympic Games, possibly altering the outcome of the competitions.

Swimmers who wore the Speedo LZR Racer in Beijing trampled over longstanding world records seemingly with ease, leading many to believe that the suit played a large role in the swimmers' successes. 15 out

of the 16 gold medal winners wore the LZR, a statistic which implies that swimmers who failed to wear the suit might have put themselves at a severe disadvantage (Thurrow and Rhoads 2008). What is so different about this particular suit, some may ask? To create the LZR, engineers from NASA and Speedo carefully selected the suit's fabric by running a series of tests conducted in NASA's wind tunnels to determine which fabric would provide the least surface drag (Speedo 2008). Once the fabric was chosen, Speedo used lasers and vibrations from ultrasonic, or high-frequency, energy to fuse together the differently shaped patches of thin polyurethane membranes, made of a synthetic, flexible, water-proof material, to create a completely seamless suit (Center for the Polyurethane Industry 2008). The

LZR is also designed with an area that compresses the swimmer's chest and abdominal area which allows the body to become more streamlined (Ward 2008). With



*The LZR is designed with an area that compresses the swimmer's chest and abdominal area which allows the body to become more streamlined.*

<http://ricardomonteiro.org/wp-content/uploads/2008/08/lzr.jpg>

this technology, how could one not win gold? Mark Spitz, the record holder for most gold medals won in a single Olympics prior to Michael Phelps, wore a simple swimsuit bottom and donned a mustache while competing, which was perfectly acceptable at the time when swimsuit technology had not yet become a matter of concern. In today's world, a specialized swimsuit like the LZR gives those who choose to wear it an edge over their competitors, prompting even the world's best swimmers never to swim a race without it.

When people were not watching Michael Phelps dominate in the water, they most likely caught a glimpse of Kerri Walsh and Misty May-Treanor attempting to win their second consecutive Olympic gold in beach volleyball. What generated a lot of buzz was not how well they were performing on the sand, but the mysterious black markings that covered Walsh's right shoulder while she played. On the arm of "Six Feet of Sunshine" was neither fresh ink nor Sharpie marker but a newly developed therapeutic tape called Kinesio that Walsh used to provide support for her shoulder, for which she had undergone surgery just last year. Applied to help treat muscular disorders and aid in reduction of lymphoedema, the collection of lymph fluids in body tissues, Kinesio tape also serves to prevent over-contraction of muscles (National Cancer Institute 2008). The science behind the tape, developed by Japanese doctor Kenzo Kase, goes as such: the tape lifts the skin ever so slightly so that lymph vessels, which carry lymphatic fluid throughout the body, and receptors of nerve impulses beneath the skin are not compressed, allowing the fluid to flow with ease and reducing any pain the athlete may be

experiencing (American Cancer Society 2008; Kinesio 2008). Kinesio tape mimics the thickness and elasticity of the human epidermis, literally acting as a second skin. While wanting to recover from aches and pains as quickly as possible is certainly understandable, the athletes in previous Olympic Games had no such luxury of using the specialized Kinesio tape to enhance their performance or minimize the effects of their injuries. Kerri Walsh is undeniably a gifted volleyball player, but gone are the days when even players like her who are at the top of their game feel adequate enough to compete without the assistance of technology.

Kerri Walsh may have benefited from the technology of Kinesio, but she had yet to take advantage of Nike's specialized light-reflecting contact lenses. Polarized sunglasses have become a part of the standard competition uniform

for many athletes competing in outdoor sports, but members of the British women's field hockey team took vision aids to the next level when they wore Nike's MaxSight contact lenses while playing underneath the blazing Beijing sun. Whether these contact lenses are more effective than regular sunglasses is

debatable, but wearers of these lenses are promised a reduction of glare from the sun and the enhancement of contrast, which provides a sharper focus. The lenses filter specific wavelengths, similar to the polarized lenses of sunglasses (Bausch & Lomb 2008).

However, unlike sunglasses, the lenses cover the whole of the cornea, allowing vision to be enhanced any which way the wearer looks, a feature that is useful when the field hockey players are constantly shifting their eyes to follow the movement of the ball (Fermoso 2008). Players who wear these contact lenses

---

*"Although the IOC (International Olympic Committee) bans competitors from putting unnatural substances in their bodies, athletes and their coaches have devised a way around this rule through a form of external doping."*

---

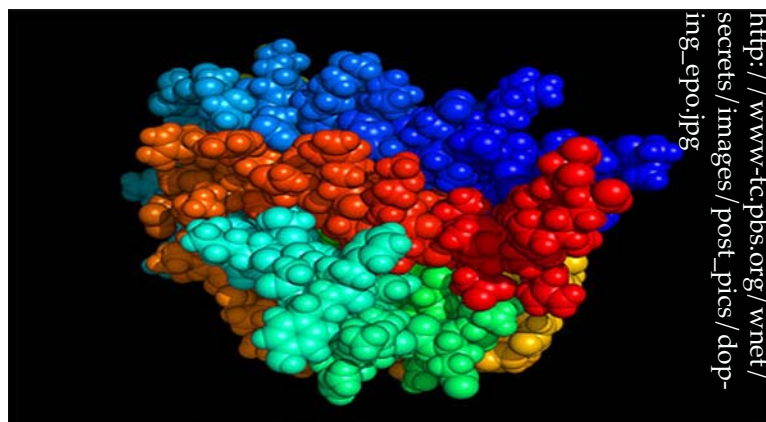


*Kinesio tape (in black) helps to reduce lymphoedema collection in body tissues.*

<http://scottsdalechiropractor.org/images/image.jpg>



will have clear advantages over those who do not, so does this throw off the level of fairness in the game? If one team is able to see better than the other with the help of technological devices, how is that any different from using other performance boosters to run faster or hit harder? Nike's MaxSight lenses are certainly helpful to athletes who compete outdoors, but the game will only be fair if all competitors are given an equal opportunity to wear them.



*Substances such as erythropoietin, commonly utilized by cyclists to stimulate their bodies to create more oxygen-carrying red blood cells, have long been banned by the IOC.*

Sources of unfair play in addition to Nike's contact lenses include the use of substances to enhance one's performance in competition. Although the IOC (International Olympic Committee) bans competitors from putting unnatural substances in their bodies, athletes and their coaches have devised a way around this rule through a form of external doping. Substances such as erythropoietin, commonly utilized by cyclists to stimulate their bodies to create more oxygen-carrying RBCs (red blood cells), have long been banned by the IOC for giving an unfair advantage to the competitors who choose to use them. So what is an athlete to do with nary a performance enhancer permitted? Enter: the Colorado Altitude Training CAT-150. This tent-like contraption creates a hypoxic, or low oxygen, atmosphere that triggers the body to produce more RBCs that carry oxygen to the muscles (Fermoso 2008). By spending time in the hypoxic environment of the tent prior to their competitions, athletes allow their bodies to build up a high level of RBCs, effectively achieving the same result as if they had used erythropoietin. Although both forms of doping alter athletes' performances, the hypoxic tents have yet to be recognized by the IOC as a form of doping. As a result, the athletes who fail to utilize one of these tents can only hope that their RBC levels are high on competition day.

The Games have evolved so that those who compete solely in their natural, unaltered state are

penalized for playing by the traditional rules. In an interview with Scientific American Magazine, three-time Tour de France winner Greg LeMond recalls the feelings of helplessness and outrage he experienced when he discovered that the other competitors who were passing him by on the racecourse during his fourth-win attempt were only capable of doing so through doping. "I was the fittest I had ever been, my split times in spring training rides were the fastest of my career, and I had assembled a great team around me, but something was different in the 1991 Tour. There were riders from previous years who couldn't stay on my wheel who

were now dropping me on even modest climbs" (Shermer 2008). The cycling races in the Olympic Games are no different; "clean" competitors often find themselves lagging behind the substance-fueled riders. Those who do manage to win fair and square find their successes often tainted by accusations of doping, another downfall that results from the widespread use of performance enhancers (Pipe and Hebert 2008). The use of hypoxic tents remains legal as of now, but its tendency to divide the competition may lead to its prohibition.

Traditionally, sporting events served to pit one power against another to determine which was the more dominant. Men have competed with each other to prove themselves victorious in almost every form of measurement thinkable: speed, aim, and physical strength. With the progression of time, man's biggest threat is no longer his strongest opponent; man and technology are now in constant battle.

## REFERENCES

- American Cancer Society. "ACS: Understanding Lymphedema." American Cancer Society, Incorporated. [http://www.cancer.org/docroot/MIT/content/MIT\\_7\\_2x\\_Understanding\\_Lymphedema.asp](http://www.cancer.org/docroot/MIT/content/MIT_7_2x_Understanding_Lymphedema.asp) (accessed November 25, 2008).
- Bausch & Lomb. "Nike MAXSIGHT Sport-Tinted Contact Lens." Bausch & Lomb Incorporated. [http://www.bausch.com/en\\_US/ecp/visioncare/product/softcontacts/nike\\_maxsight\\_ecp.aspx](http://www.bausch.com/en_US/ecp/visioncare/product/softcontacts/nike_maxsight_ecp.aspx) (accessed November 25, 2008).
- Center for the Polyurethanes Industry. "Polyurethane." Center for the Polyurethanes Industry of the American Chemistry Council. [http://www.polyurethane.org/s\\_api/sec.asp?CID=853&DID=3487](http://www.polyurethane.org/s_api/sec.asp?CID=853&DID=3487) (accessed November 25, 2008).
- Formoso, Jose. "Gadgets Boost Olympic Performance—Legally." *Wired*, August 9, 2008.
- Kinesio. "What is Kinesio Taping?" Kinesio. <http://kinesiotaping.com/what-s-kinesio.php> (accessed November 25, 2008).
- National Cancer Institute. "Lymphedema." National Cancer Institute. <http://www.cancer.gov/cancertopics/pdq/supportivecare/lymphedema/patient> (accessed November 25, 2008).
- Pipe, Andrew and Paul C. Hebert. "Doping, sport and the community." *Canadian Medical Association Journal* 179, no. 4 (August 12, 2008), <http://www.cmaj.ca/cgi/reprint/179/4/303>
- Shermer, Michael. "The Doping Dilemma." *Scientific American Magazine*, March, 2008.
- Speedo. "Surface Drag Testing." Speedo International. [http://www.speedo80.com/lzr-racer/development/surface\\_drag\\_testing/](http://www.speedo80.com/lzr-racer/development/surface_drag_testing/) (accessed November 25, 2008).
- Thurow, Roger, and Christopher Rhoads. "The Doping Dilemma." *Wall Street Journal*, August 14, 2008, Sports section.
- Ward, Bill. "New Speedo LZR suit making a splash." *Tampa Tribune*, May 28, 2008, Sports section.

## CITED PICTURES

[http://www.olympic.org/upload/sports/main/at\\_main.jpg](http://www.olympic.org/upload/sports/main/at_main.jpg)