

## Sports:

Athletes' motions are analyzed to improve their performance.



<http://www.tnlsportsperformance.com/index.php?page=csm>



<http://www.artinstitutes.edu/upload/losangeles/Motion%20Capture%20Suit%202.jpg>

A baseball pitcher's movements are analyzed to determine how he can change his wind up to increase the speed of his pitch.

## Animation/Films:

One of the greatest challenges Pixar, Dreamworks, and other animation film

makers face is making film makers face is making life-like animations. The picture shows how Tom Hank's motions where analyzed for the film *Polar Express*.



<http://www.imageworks.com/>

## Motion Analysis and Prosthetics

The best prostheses replicate the biomechanics of the human limb that they replace. Prosthetic foot manufacturers test their feet designs out to ensure it closely replicates a normal human gait.



[http://www.quintic.com/software/sample\\_videos/index.htm](http://www.quintic.com/software/sample_videos/index.htm)



## Applications:



[http://www.quintic.com/software/sample\\_videos/index.htm](http://www.quintic.com/software/sample_videos/index.htm)



<http://www.sportsperformancecentres.com/services.php?id=biomechanical>

$$v = \Delta d / \Delta t$$

$$a = \Delta v / \Delta t$$

For example, if I run 10 meters in 5 seconds, how fast am I going?  
Or what if I speed up from 6 m/s to 10 m/s in 2 seconds, what is my acceleration?

$$v = (10 \text{ m}) / (5 \text{ sec}) = 2 \text{ m/s}$$

$$a = (10 \text{ m/s} - 6 \text{ m/s}) / (2 \text{ s}) = 2 \text{ m/s}^2$$