

## Technology as A Way to Improve Performance for the Paralympic Athletes

Tiago Guedes Russomanno\*

Physical Education Faculty, University of Brasilia, Brasilia, Brazil

When it comes to discuss Paralympic athletes and technology, the first thing that came to our minds is the J-legs used by the runners. We think about the technology involved in the engineering of those springs and how they affect the performance of the runners. Recently, the Oscar Pistorius case has called the media's attention to Paralympic athletes who achieved index for the Olympics games with the use of special devices, such as the J-legs.

This story starts in 2008 when Oscar Pistorius made an attempt to participate in the Olympic games of Beijing. A large debate took place in the sport media and reached the scientific community. The advantages and the drawbacks of using J-legs have been discussed along with comparisons between Olympic and Paralympic athletes' performances. As we can see, this discussion became an important issue in the field of biomechanics, biomaterials, ergonomics and physiology. This matter was only solved at the Olympic Games in London in 2012. The IOC allowed Oscar Pistorius to compete in the athletics based on a published research that concluded that the use of the J-legs did not provide any advantage for the athlete.

The study published in the Journal of Applied Physiology by Weyland et al. [1] in 2009 showed that running on modern, lower-limb sprinting prostheses appears to be physiologically similar but mechanically different from running with intact limbs. With the J-legs, the gross metabolic cost was only 3.8% lower than the normal athletes. Despite the Weyland's results, and what one could see on the track, the main problem is not the difference between Olympic and Paralympic athletes. The main concern is how scientists can improve the performance of a Paralympic athlete, from the early phases of his career to the top level, using the existing technology in sport science developed for normal athletes. If we look on the articles published in a database like PubMed, we notice that only a small fraction (15%) of

the published papers are related to Paralympic sports as compared to articles published with athletes and Olympic sports.

This difference might induce gaps in the knowledge about Paralympic sports, due to insufficient biomechanical, ergonomical, and physiological studies. One relevant research field left out is the area of physical training and physical evaluation, mainly related to training methods concerning the improvements in performance.

Several athletes and coaches have reported that some core and balance exercise can improve the total balance of the body and consequently leading to an enhancement in performance not only in track and field events, but also in all others events. Regrettably, this kind of observation was not yet studied for these athletes in a way to evaluate and improve the physical training methods adopt by coaches and teams.

So the main concern for the researches of sports science is not the advantages and drawbacks of Paralympic athletes, but the development of training techniques, equipments and methods that can be used during training activities. Therefore, the next goal of biomechanics, ergonomics and other related fields is to improve Paralympic athlete's performance with benefits for all athletes, not just in the world-class level but also in the very early stages of training, which is pivotal to build a top-level athlete.

Therefore, I would like to invite all researchers to think about the possibilities of research in this field.

### References

1. Weyand PG, Bundle MW, McGowan CP, Grabowski A, Brown MB (2009) The fastest runner on artificial legs: different limbs, similar function? J Appl Physiol. 107: 903-911.

\*Corresponding author: Tiago Guedes Russomanno, Physical Education Faculty, University of Brasilia, Brasilia, Brazil, E-mail: [tiagogr\\_2000@yahoo.com.br](mailto:tiagogr_2000@yahoo.com.br)

Received July 26, 2013; Accepted July 28, 2013; Published July 30, 2013

Citation: Russomanno TG (2013) Technology as A Way to Improve Performance for the Paralympic Athletes. J Ergonomics 3: e117. doi:10.4172/2165-7556.1000e117

Copyright: © 2013 Russomanno TG. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.