Autonomic assessment as a part of wheelchair Paralympics athlete’s classification

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Dr. Andrei Krassioukov is the principal investigator leading a team of ten co-investigators with a goal to develop an easy method to examine the autonomic function of Paralympic athletes with Spinal Cord Injuries (SCI). The project, entitled Autonomic Assessment as a Part of Wheelchair Paralympics Athlete’s Classification, is important because the autonomic nervous systems of individuals with SCI respond differently, depending on the level of their injury. Dr. Krassioukov hopes that a simple test could be developed that would be incorporated into the current Paralympic classification guidelines in a way that provides a fairer assessment of individuals with Spinal Cord Injury (SCI). He wants to even the playing field for those with SCI.
Currently, Paralympic athletes with SCI put their lives on the line to try to level that playing field. From previous research, we know that athletes with SCI have differing levels of blood pressure due to their condition. Many have low blood pressure, body temperature irregularities, and bowel and bladder dysfunction as a result of SCI. Their autonomic systems do not function properly. An able bodied person who exercises, for example, experiences an automatic increase in blood pressure and heart rate. Someone with SCI does not experience this automatic body response to exercise. This leads to fatigue and low endurance to exercise. An amputee and a person with SCI, both participating in wheelchair sports, would appear to be equal participants, but the reality is that their abilities to control their autonomic functions are quite different. An amputee retains the functions of their autonomic system whereas a person with a spinal cord injury does not. To compensate for this, athletes with SCI put themselves in a dangerous position by engaging in “boosting” to intentionally cause Autonomic Dysreflexia during training or competition.

Autonomic Dysreflexia is “a dangerous rise in blood pressure that is triggered by a painful or non-painful stimulation below the level of spinal cord injury (SCI)” (Krassioukov, A. & Soril, L., 2010). Athletes with SCI are boosting by intentionally inflicting dangerous stimulation to cause Autonomic Dysreflexia in order to boost their performance. Boosting can be fatal and outcomes are unpredictable for the SCI athlete. It can cause the athlete to sweat profusely, get a pounding headache, blurry vision, nasal congestion, nausea and difficulty breathing. It can also cause stroke and death. Dr. Krassioukov and his team want to decrease the practice of boosting as an outcome of this project.

The test that they are developing will evaluate the severity of autonomic dysfunction in a person with SCI in order to provide a better understanding of their capabilities. Once this is established, the goal would be to add this variable to the current classification testing already done under International Paralympic Committee (IPC) regulations in order to create a system of equity for SCI athletes. Although the IPC condemns the practice of boosting, it is almost impossible to definitively detect. The hope is that a test and new classification system will discourage the practice of boosting among athletes with SCI.

Dr. Krassioukov started communicating with the Research Committee of the IPC five years ago in regards to this project. He proposed that if he could develop a simple non-invasive test for autonomic assessment that autonomic evaluation could become standard in future Paralympic classification for the International Paralympic Games. The IPC accepted this proposal for the Beijing 2008 Paralympic Games. Funding through the Disabilities Health Research Network was provided for the initial steps in the project. Testing was started on 27 athletes from the international wheelchair rugby team in BC in 2007/2008 when an international Paralympic competition was held in Burnaby, BC. The resulting data was then presented in October 2008 at the International Spinal Cord Scientific (ISCoS) Conference in Florence, Italy. The IPC was very supportive of this research.

Shortly after this, Dr. Krassioukov applied to continue the study at the Vancouver 2010 Paralympic Games. His team’s project was the only one accepted out of four to be permitted to open a clinic right in the Olympic village. This was quite an honour as it had never been done before. In addition to this clinic, there are also plans to open a clinic at the International Collaboration on Repair Discoveries (ICORD) which will test Paralympic athletes who will not be residing in the Olympic village during the games. Eight of Dr. Krassioukov’s students and colleagues will receive official accreditation to be on site at the
Olympic village and will be scheduled for nine hours a day to evaluate volunteer athletes. As a project supported by the IPC, communications have already been sent to all participating athletes to request their participation in this project. When the research team was involved in testing wheelchair rugby athletes there was so much interest they had to turn people away. They are expecting as much enthusiasm from the wheelchair curling and sledge hockey teams at the 2010 Vancouver Paralympic Games.

Dr. Krassioukov would like to thank his team, the IPC, volunteer athletes and funding supporters: DHRN and the Craig H. Neilson Foundation. He is passionate about this work. His goal as a physician and as a human being is that the work of his research teams will make a difference in evening the playing field for athletes with SCI so that they can participate in international sport with less risk. Dr. Krassioukov is passionate when he states that “These athletes are already my hero’s. Any athlete participating in sport is an incredible achievement that I would like to support through our work”.

References


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