

DEVELOPMENT OF A CLASSIFICATION PROTOCOL FOR PARALYMPIC SIT-SKIERS

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In 2011 International Paralympic Committee (IPC) initiated a discussion to improve the classification process in Paralympic Nordic sit-skiing athletes. In order to get a more evidence based classification biomechanical methods should be established in order to get valid and reliable values to improve the objectivity of the classification process and as well to make the process more transparent. Literature referring to the special requirements in sit skiing are rare. Therefore, in order to get a better understanding about performance in sit-skiing, video samples from 46 athletes competing at Sweden World Cup race 2013 were collected and analysed to get an impression about relevant parameters in sit skiing (Schillinger et al. 2015). From these videos it was obvious that a more "Kneeing" position seems to be connected to more efficient poling with longer cycle length and more trunk movement. This was furthermore supported by laboratory studies with non-disabled athletes at a ski ergometer where in a kneeling position higher poling velocities could be achieved (Rapp et al 2013) and also the energetic expenditure (Lajunen et al 2015) is more efficient in kneeling compared to a position where the knees are over hip level. The latter is adopted by athletes with higher impairment in order to keep the trunk in an upright position. The rules in sit-skiing restrict the sitting height to 40cm and the buttocks must have permanent contact to the sitting platform. Therefore forward propulsion can only be generated by double poling using arm and trunk. Generating forces by the trunk, however, is limited by the level of impairment. Based on this knowledge evaluating trunk stabilization is an essential requirement in sit skiing and must be integrated into a test setup. Therefore a test setup was established where the influence of the athletes own equipment could be excluded. A special device was constructed for recording force production of the upper body (bench press) with and without back support. Furthermore a perturbation test was established. Goal of this perturbation is to move the athlete in an unpredictable way either in anterior or posterior direction or in medio lateral direction and force him to keep the trunk position stable. Both test situations were tested with Paralympic world class athletes and showed a good compliance of athletes and coaches from different nations. These tests and some major results will be shown during the ICSS 2016 Congress.

REFERENCES:

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