WHEELCHAIR ROAD RACING (WHEELCHAIR SPORTS) pdf

1: Oz Day 10K Wheelchair Road Race - Wikipedia

Bleakney shared with us his expertise - not just from 11 years of marathon racing, but also from training and competing in the Paralympics and from his career as the head coach of the wheelchair track and road racing squad at the University of Illinois at Urbana-Champaign.

The process of combining the athlete and the wheelchair into a sport system varies depending on the specific sport. However, some general principles can be applied with regard to fitting the wheelchair itself. Additionally, there are some specific performance considerations for racing wheelchairs and court chairs. Fitting the Wheelchair to the Athlete Proper fitting of the wheelchair to the athlete is critical for high levels of athletic performance. Most manufacturers provide retail experts who are experienced in measuring athletes for performance wheelchairs. In fitting the frame, the two most critical considerations are the dimensions of the seat width, length, and backrest height and the position of the seat in relation to the main wheels. Both these considerations serve to ensure that the wheelchair fits the athlete perfectly and that she is in an optimal position to apply force and maneuver the wheelchair. Refer to the application example for a list of considerations to keep in mind while helping athletes find the chair that is best for them. Application Example Helping a Wheelchair Athlete Find the Right Sport and Chair Setting A community-based junior wheelchair sport program Student A year-old junior wheelchair basketball player with a spinal cord injury needs recommendations to refine his individualized transition program to incorporate adult wheelchair sports. The player is tall, has played the center and forward positions, and wishes to purchase his own wheelchair. Issue What considerations should be taken into account in making recommendations to this athlete? Application Considerations for this athlete center on equipment, physical fitness, and individual skills. Propulsion Techniques in Track and Road Racing Coupled with the evolution of the racing wheelchair has been the development of ever more efficient propulsion techniques. A six-phase technique see figure Basic Stroke The propulsion cycle starts with the hands drawn up as far above and behind the push rim as possible given the seating position and flexibility of the athlete. The hands are then accelerated as rapidly and forcefully as possible acceleration phase until they strike the push rim see point A on figure The moment of contact is the impact energy transfer phase point B on figure With the hand in contact with the push rim, there is a force application, or push, phase point C on figure During the force application phase, most of the propulsion comes from the muscles acting around the elbow and shoulder. As the hands reach the bottom of the push rim, the powerful muscles of the forearm are used to pronate the hand, which allows the thumb to be used to give a last, powerful flick to the push rim. This last flicking action is reversed by a few athletes who use supination in the rotational energy transfer phase point D on figure Immediately following the rotational energy transfer, the hands leave the push rim during the castoff phase see point E on figure Here it is important that the hand be moving faster than the push rim as it pulls away, since a slower hand will act as a brake on the wheelchair. Often the athlete will use the pronation or supination of the rotational energy transfer phase to accelerate the hands and arms and thus allow them to be carried up and back under ballistic motion. This upward and backward motion is called the backswing phase point F on figure On uphill parts of a course, the athlete shortens the backswing and acceleration phases so as to minimize the time during which force is not applied to the push rim and during which the chair could roll backward. Tactically, the athlete is either wheeling at constant speed or is making an attack and needs to accelerate. The basic stroke described previously is used at steady speed; during bursts of acceleration, the major change in stroke takes place during the backswing. At steady speeds, the backswing is a relatively relaxed ballistic movement in which the velocity at castoff is used to raise the hand to its highest and most rearward position. This relaxed backswing is efficient and allows a brief moment of rest during each stroke. During acceleration, however, the major change in stroke dynamics is to increase the number of strokes from approximately 80 per minute to more than per minute. This is achieved by a rapid reduction in the time taken for a more restricted backswing. Race Start The stroke is modified during the start of a race. Because the wheelchair is stationary, the hands should grip the push rim rather than striking it , and for the first few strokes the arc of pushing will be more restricted with as rapid a recovery as

possible. Some athletes attempt to make longer, more forceful pushes to get the wheels going, whereas others make shorter, sharper pushes to get the hands moving fast as early as possible. Retarding Forces and Overcoming Them While the athlete provides the energy to drive the wheelchair forward, the twin retarding forces of rolling resistance and aerodynamic drag act to slow it down. When propulsive forces are greater than resistance, the wheelchair accelerates, and when the retarding forces are greater, the chair is slowed. Obviously, reductions in rolling resistance and aerodynamic drag translate directly into higher wheeling speeds and improved athletic performance. Rolling Resistance On a hard, smooth surface, the majority of the rolling resistance of the wheel occurs at the point where the tire is in contact with the ground. As the tire rotates, each part is compressed as it passes under the hub and is in contact with the surface; then it rebounds as it begins to rise again and contact with the surface is broken. Not all the energy used to compress the tire is recovered on the rebound, and the energy loss called hysteresis is the major determinant of rolling resistance. Rolling resistance of racing wheelchairs is also affected by the camber angle of the main wheel, which increases with camber Faupin et al. Wheels that are not toed correctly dramatically increase the rolling resistance of a wheelchair. Athletes should do everything in their power to check and adjust alignment before every important race. Aerodynamic Drag The problem of aerodynamic drag of racing wheelchairs and athletes is unique in sport because of the relatively low speeds at which events take place. Races 10, meters on the track take place at average speeds between 6. Although the race times of wheelchairs have dramatically improved over the last decade, the times are still considerably slower than the speeds found in cycling. This creates special low-speed aerodynamic conditions. Aerodynamic drag is caused by two separate but interrelated forces called surface drag and form drag. Surface drag is caused by the adhesion of air molecules to the surface of an object passing through it, and it is very powerful at low speeds. Form drag, on the other hand, is caused by the difference in air pressure between the front and the back of an object, which in turn is created by the swirls and eddy currents formed as the wheelchair and athlete pass through the air. For wheelchair racers, the problem is that smooth surfaces increase surface drag while decreasing form drag. Drafting Because aerodynamic drag represents approximately 40 percent of the force acting to slow down a wheelchair racer, methods of minimizing this can pay considerable dividends. The single most effective way in which drag can be reduced is the process of drafting. Drafting occurs when one wheelchair follows closely behind another wheelchair that acts as a wind deflector. At the end of long races, the energy saved by drafting can be a critical determinant of race outcome. Frequently teams work together, taking turns at both leading and drafting so that their overall performance will be increased. System Considerations for Court Wheelchairs This section does not include information on propulsion techniques in court sports. There is less research on propulsion techniques for court sports, presumably because of the wide variability in the propulsion techniques as compared to those in racing; however, Vanlandewijck and colleagues conducted a review of propulsion biomechanics that included not only wheelchair racing but also basketball and rugby. For those interested in increasing wheelchair sport performance, it is recommended reading. As mentioned previously, the two fundamental features of a sport wheelchair are the dimensions of the seat and its positioning in relation to the wheels, although there are differences in the reasoning behind both of these features in relation to racing wheelchairs. In wheelchair racing, the key performance indicator is speed or endurance or both in a predominantly linear direction. However, in court sports, maneuverability is also a key area of performance. Therefore, whereas wheelchair racers require a perfectly fitting seat so that no energy is lost during propulsion, court sport athletes desire a seat customized to their anthropometrics to facilitate their agility. If a seat is too wide, the athlete can slide around in the chair, which equates to a loss of energy during turning; the body has to then catch up before being in a position whereby force can be applied to the wheels. When the seat is the correct width, the wheelchair should be able to respond more effectively to the athlete. This enables those athletes with sufficient trunk function to be able to maneuver their chair without necessarily having to touch their wheels. This feature of performance can also be facilitated by strapping around the knees or lap, which further secures the athlete to the chair, making movements such as tilting in wheelchair basketball possible. The backrest is another dimension of the seat that warrants consideration when one is configuring a sport wheelchair. Alternatively, if the backrest is too high, movements can be restricted when the athlete is

trying to move backward to reach a ball in basketball or rugby or hitting the ball in tennis. Strapping around the trunk can be applied to facilitate stability, although similar precautions must be taken to ensure that strapping is used only if the functional capacity of the athlete requires. To further facilitate the fitting of the athlete to the sport wheelchair and subsequently maximize maneuverability performance, molded seats have recently emerged in wheelchair tennis and wheelchair basketball figure Since a molded seat will mimic the exact dimensions of each individual athlete, previous limitations associated with a conventional seat, such as energy loss during propulsion and impaired maneuverability, should be eradicated. Example of a a conventional sport wheelchair seat and b a molded seat to facilitate maneuverability performance. Photos courtesy of Dr. Once the seat is successfully designed for the specific athlete, the next thing to consider is where the seat fits in relation to the main wheels in both a horizontal anterior - posterior and vertical position see figure Anterior - Posterior Seat Position Horizontal positioning of the main wheels affects the mobility of the chair. The farther forward the main wheel from a hypothesized neutral position see figure Unfortunately, the farther forward the main wheel relative to the center of gravity, the more likely it is that the chair will tilt up. Although the introduction of the anti-tip castor wheel prevents the athlete from falling backward, it does place a large percentage of body mass over the rear castors. Consequently, athletes need to reposition their body weight forward in order to drive the wheels forward, which will be limited by their trunk function. However, this is a position that many low-point wheelchair rugby players are forced to adopt since they do not have the triceps function or stability to sit above the wheel and drive it down. Alternatively they choose to sit farther back so that they can make the most of their biceps function and "pull" the wheel up and forward. Vertical Seat Position Vertical positioning of the main wheel affects the height at which the athlete sits and the center of gravity of the system. This fundamentally affects the handling properties of the chair. Again, using a hypothetical neutral position figure Therefore, all other things being equal, the athlete should sit as low as possible. However, performance considerations place a premium on height in all sports. Shooting is easier in basketball when athletes sit high because they are closer to the basket. Likewise, receiving a rugby pass is easier if one sits higher and can reach above the opponent. Finally, a tennis serve is made easier when the athlete is elevated above the height of the net, as there is now a greater margin for error. Given the advantages associated with sitting high, athletes can often forsake the optimal position for pushing the wheelchair, putting their mobility performance at risk. As the height of the seat increases, the athlete effectively moves farther away from the wheels. In order to access enough of the wheels to effectively apply force, athletes depending on trunk function will have to lean forward. In order to reduce the distance that athletes have to lean, many have countered this by selecting a larger wheel size to make the wheels more accessible in a higher seat position. However, this can introduce alternative and potentially negative effects on performance, with a larger wheel thought to impair acceleration and maneuverability performance. Mason and colleagues a, b have provided a more in-depth evaluation of the effects of wheel size on aspects of mobility performance in wheelchair basketball players. In summary, when enhancing wheelchair sport performance on the court, athletes should identify the functional aspects of the game and their roles or positions coupled with their strengths and weaknesses. This will depend in part on the disability level of the athlete.

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2: British Wheelchair Racing Association

*Wheelchair Road Racing (Wheelchair Sports) [James R. Little] on www.enganchecubano.com *FREE* shipping on qualifying offers. Describes the history of the sport of wheelchair road racing, as well as the training, equipment, and rules involved.*

Before the wars, individuals with disabilities were considered as burdens on society. As many veterans of war returned home with physical impairments and psychological needs, new programs had to be put in place to help make the transition back into society, as traditional methods were not able to accommodate. Sir Ludwig Guttmann , director of this center, introduced competitive sports as an integral part of the rehabilitation of disabled veterans. In the late s, sports for rehabilitation spread throughout Europe and throughout the United States. During this time competitions and sporting events for individuals in wheelchairs emerged throughout Europe. In the first international competition for athletes in wheelchairs was organized between the British and the Netherlands. A total of athletes with spinal cord injuries competed in six sports. Since the beginning of the games in Stoke Mandeville wheelchair sports has expanded with the addition of many sports. Beginning with wheelchair archery , lawn bowls , table tennis , shot put , javelin , and club throw were added to the growing list. In the s wheelchair basketball , fencing , snooker and weightlifting were also introduced. Although originally sanctioned for those with spinal cord injuries, these games were expanded in at the Olympiad for the Physically Disabled in Toronto, Canada, to include other physical and visual impairments and would evolve and eventually be referred to as the Paralympics. In the s international sports competitions were expanded to include other disability groups who were not eligible for the World Games. In addition, the International Sports Organisation for the Disabled ISOD was officially formed in Paris in , to provide international sports opportunities for the blind, amputees and persons with other loco motor disabilities. There is also a road event which is the wheelchair marathon. Athletes who are in a wheelchair can also participate in field events as well; these include shot put, javelin, and discus. Para-athletics classification Classification systems have been put into place to ensure that the competition is fair, ensuring that all of the competitors have an equal opportunity to place, and they can because of their talent and not because their disability was less severe than the other competitors. Athletes are divided into categories depending on their disability, these are spinal cord injury or an amputee, or cerebral palsy. The classification guidelines are continually being changed to include more athletes. Classes T51 â€” T54 are for athletes in a wheelchair who are competing in track events, and classes T55 â€” T58 are for athletes who are competing in field events. An athlete who is classed as T54 is completely functional from the waist up. An athlete who is classed as T53 has restricted movement in their abdominals. An athlete who is classed as either T52 or T51 has restricted movement in their upper limbs. Athletes who are in a wheelchair due to cerebral palsy have different guidelines compared to an athlete with a spinal cord injury or who is an amputee, and range between T32 â€” T Classes T32 â€”T34 are classes for athletes in a wheelchair and classes T35 â€” T38 are for athletes who can stand. Many of the wheelchairs tend to be very lightweight, with pneumatic tires , [5] and with the dimensions and features on the wheelchairs clearly specified in the IPC Athletics rules. Rule Para 2 No part of the body of the chair may extend forwards beyond the hub of the front wheel and be wider than the inside of the hubs of the two rear wheels. Rule Para 4 Only one plain, round, hand rim is allowed for each large wheel. This rule may be waived for persons requiring a single arm drive chair, if so stated on their medical and Games identity cards. Rule Para 5 No mechanical gears or levers shall be allowed, that may be used to propel the chair. Rule Para 6 Only hand operated, mechanical steering devices will be allowed. Rule Para 7 In all races of metres or over, the athlete should be able to turn the front wheel s manually both to the left and the right. Rule Para 8 The use of mirrors is not permitted in track or road races. Rule Para 9 No part of the chair may protrude behind the vertical plane of the back edge of the rear tyres. Rule Para 10 It will be the responsibility of the competitor to ensure the wheelchair conforms to all the above rules, and no event shall be delayed whilst a competitor makes adjustments to the athletes chair. Rule Para 11 Chairs will be measured in the Marshalling Area, and may not leave that area before the start of the event. Chairs that have been examined may be liable to re-examination before or after

the event by the official in charge of the event. Rule Para 12 It shall be the responsibility, in the first instance, of the official conducting the event, to rule on the safety of the chair. Rule Para 13 Athletes must ensure that no part of their lower limbs can fall to the ground or track during the event.

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3: Racing Wheelchairs - Sports Wheelchairs - Wheelchair

Are you ready to take on the challenge of road racing? Take your game to a new level with Sportaid's top quality racing wheelchairs from Invacare.

France selects 33 new athletes for Rio Just as football, tennis and basketball players wear different shoes on the playing field, Para athletes do likewise in wheelchair sports. Never would you find a Para athlete use a racing chair â€" a three-wheeled contraption â€" to play a game of wheelchair basketball. Perhaps a chair used in wheelchair tennis would be better, but it does not have the specific features needed to withstand crashes and contact with other chairs. He played wheelchair basketball but had to decide between that or athletics at his first Paralympic Games in Beijing ; he chose athletics. Different push rims The muscles George used to push a wheelchair in basketball are completely different than those for a racing chair. Part of that is because of the difference sizes in the push rims. In a basketball chair, athletes sit higher than on a racing chair, thus are using a bigger push rim that can range from cm in diameter, compared to cm. Meanwhile, everything that has gone into a racing wheelchair is designed for straight ahead speed, and athletes have to manage their energy efficiency depending on the distance they are racing, George said. Nowhere near as fast as a racing chair. Stability for athletes of different classes in racing chairs is seen more in camber, which is the angle of the two main wheels. The wider the wheelbase, the better the turn and lateral stability. In basketball and tennis, chairs have 20 degrees of camber, which means the wheel is bent 20 degrees to the ground and allows the chair to turn really fast. Racing chairs on the other hand have degrees of camber, mostly for lateral stability, especially around turns. So you rely on the wheelbase to hold you upright. Although less camber rolls better, George said it does not make a difference on the track. In this way, they are not actually grabbing the push rim with their hands. The gloves allow them to put far greater power and have greater efficiency. Wheelchair rugby players also use gloves to push and handle the ball, as athletes are tetraplegic. Their chairs also have protection on the wheels that hide the spokes to protect athletes who have little feeling in their hands. Contact, non-contact sports Chair-to-chair contact is inevitable in basketball and rugby. In wheelchair rugby , there are offensive and defensive chairs. Offensive chairs are set up for speed and mobility and contain a front bumper and wings to prevent other wheelchairs from hooking it. Defensive wheelchairs contain bumpers set up to hook and hold other players. In wheelchair basketball , a rounded ring is in front to prevent chairs front getting stuck when they make contact. However, wheelchair tennis does not have a specific feature to protect against contact, but rather longer, extended wheels in the front that would allow athlete to reach as far out to return shots. And once an athlete finds a chair that they are comfortable with, they stick with it for all competitions in their sport. Para sport explained is a feature series on Paralympic.

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4: 5 Companies That Make Racing Wheelchairs : Friendship Circle â€" Special Needs Blog

*Free Shipping on most orders over $99 within the Continental USA * Does not apply to oversized packages, as noted in item options.*

HOME The BWRA is the governing body for wheelchair racing in Great Britain actively promoting participation, equality and governance for disabled people in this exiting sport on road and on track. We are a voluntary organistion. The majority of our operational expenses are funded by donations. We would like to thank all of those who were involved in running the event. The BWRA is a wholly voluntary organisation and it is the goodwill, time and expertise of our volunteers which makes such events a success. Good luck for the rest of the season! Go to membership renewal form for by clicking here. The 3 hour limit and registration of vehicle registration numbers still stands so please inform us of any new or updated registrations that will be passed to MET parking to be permanently excluded any time related charges. Please also note at large events where a high frequency of unregistered vehicles are occupying the car park, the cameras may be turned off. This can be confirmed at reception if this is the case. If you have any questions in regards to parking at the Stadium, please do not hesitate to contact Vickey Hawkes , Events Manager. Josie Cichockyj 9 December â€" 2 December It is with the greatest sadness a great wheelchair athlete and friend, Josie Cichockyj, passed away 2 December Josie had a fantastic sporting career across a number of sports including track and road racing, wheelchair basketball and wheelchair tennis. Josie not only broke a multitude of racing records, representing Great Britain at the Paralympic Games at Stoke Mandeville. The highlight of her track career was breaking the 5,m World Track record. Later Josie turned her focus and passion to developing sport in the UK and, as the British Wheelchair Basketball Board Member responsible for Women in Wheelchair Basketball, Josie was committed to both developing and supporting the sport at all levels of the game. Josie will be tremendously missed by all her friends in wheelchair sport Derby 10k Wheelchair Event 19th April The Derby 10k takes place on the 19th April Last year was the first year that a 10k wheel chair race was part of the event attracting 7 entrants and positive feedback. This year currently has only 1 entrant and entries close on the 2nd March subject to race limit. The course is very good and the support and live music in the Town Square make is a great event. The closing date is the 30th of March at 5pm. Please follow the link below to enter. Also please feel free to pass this onto others you feel may want to take part. Flamengo Park will no longer be used as a Rio competition venue. The new venue for marathon is being studied and will be communicated once confirmed. Channel 4 Rio Production Trainee Scheme The Channel 4 Rio Production Training Scheme will give 24 disabled applicants an opportunity to train as production staff to the level required to work on the Rio Paralympic Games in , and beyond that to build a career in sport production. The scheme is open to entry level and junior talent to join the industry and learn the skills necessary in three possible roles: They are looking for people who have a passion for sport and are keen to share this with others. Click here for the Channel Four placement pdf with more information, which includes a link to their website for applications. More general info is here:

5: Racing Wheelchair Â« Northeast Passage

Find racing wheelchair from a vast selection of Wheelchair Parts. Get great deals on eBay! Wheelchair Road Racing (Wheelchair Sports) See more like this.

6: Wheelchair Racing

Wheelchair racing is the racing of wheelchairs for both track and road races. Racing is open to athletes with any qualifying type of disability and are typically organized by their disabilities for competitions.

7: Para sport explained: Wheelchairs in wheelchair sports

WHEELCHAIR ROAD RACING (WHEELCHAIR SPORTS) pdf

The sport of wheelchair racing itself details the design rules that must be observed. A racing wheelchair must have two back wheels and a third wheel in front with all moving parts of the chair being mechanical.

8: Wheelchair racing - Wikipedia

Wheelchair racing is the racing of wheelchairs in track and road races. Wheelchair racing is open to athletes with any qualifying type of disability, amputees, spinal cord injuries, cerebral palsy and partially sighted (when combined with another disability).

9: Eagle Sportschairs Home Page

wheelchair road racers, prompting Dr. Caibre McCann, a leading physician for the ISMGF international govern- ing body for wheelchair sports, to say: "Running is natural.

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Climate of workplace relations Rethinking the French Revolution Thermodynamic evaluation of predicted fluorinated ether, ethane, and propane azeotropes Far Country, a Complete De la vida a la muerte Ways of the world 3rd edition ap Racialization of America Growing into Christs Consciousness For Gentleness 72 Fluid Therapy in Small Animal Practice Jennifer weiner who do you love Plastic injection molding manufacturing startup and management Absolute Instinct (Jessica Coran Novels) Pre-calculus 1 001 practice problems for dummies Building materials question paper Huts, Bottleracks, and Liners Bound with an Iron Chain Frank moya pons the dominican rlic a national history American Frontier Life Contributions of Arab and Islamic scholars to modern pharmacology Kele moon starfish and coffee Geotourism potential of southern Africa Wolf Uwe Reimold, Gavin Whitfield and Thomas Wallmach Clarification of the Department of Education method of payment for special allowance granted in the court While He was here The blind always come as such a surprise Chinas new diplomatic offensive. Industrial electrical installation guide Dictionary of sephardic surnames Rivers and Oceans (Young Discoverers: Geography Facts and Experiments) The literature of ancient Greece. 3. Note of the Secretary of State of the Mexican for Foreign Affairs, dated October 30, 1926. Radiographic imaging and exposure 4th edition fauber Husqvarna viking sia 415 425 sewing service manual On track to success in 30 days The gondolier of Venice The cambridge medieval ethics workbook The Thurstons Of The Old Palmetto State Starting from snatch : the seduction of performance in Bertha Harriss Lover Victoria L. Smith 4. New language of qualitative method Rand McNally the Road Atlas 2001: United States, Canada, Mexico