FAST BREAK

Publication for team medical personnel

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WELCOME to FAST BREAK!

Welcome to Fast Break, the official quarterly news bulletin of the FIBA Medical Commission. Our goal is to introduce our FIBA sports medicine and sports science community to newsworthy research topics and develop a community of practice among physicians and clinicians involved with basketball at every level of play across the globe.

We hope this publication will foster friendly communication and discussions within the world of basketball. We welcome and encourage your questions, comments, suggestions, and contributions to this publication.

MESSAGE FROM THE FIBA MEDICAL COMMISSION

Wheelchair basketball is firmly entrenched in the 'FIBA family' through the strong relationship and collaboration between FIBA and the International Wheelchair Basketball Federation (IWBF). FIBA is working to promote basketball to all sections of the global community, and supporting the IWBF is a natural extension of that strategy. FIBA directly provides the wheelchair game with technical knowledge and financial support through a collaboration with the IWBF, an organisation now headquartered in the 'Patrick Baumann House of Basketball' in Mies, Switzerland. There are 109 National Federations in the IWBF. There has been particularly strong growth in Africa and women's game. This was evident at the IWBF World Championships in Dubai in 2022.

The fantastic thing about wheelchair basketball is that it uses the same court, ball, ring, and backboard. It makes its integration into our great game easier. Recently, at the 2022 Birmingham Commonwealth Games, wheelchair 3x3 basketball was completely integrated into the 3x3 programme of those games. This represented a significant step forward. The next target will be to build on the strong presence of basketball in the Paralympic Games with a 3x3 competition. Undoubtedly, the IWBF can say, "We are Basketball".

Dr Peter Harcourt

Chairman, FIBA Medical Commission

MESSAGE FROM THE EDITOR

In the June 2022 edition of the Fast Break, I highlighted that wheelchair basketball (WCBB) was one of the eight sports that debuted at the first Paralympic Games in 1960. The adaptive game uses the same court dimensions, basket height, and essentially the same FIBA rules as the stand-up game. There is no double-dribble in WCBB, but travelling occurs if one carries the ball for more than two chair pushes. WCBB is a fast-paced, engaging sport that has become one of the premiere Paralympic sports.

Success in Paralympic sports is significantly impacted by classification.
In 2015, the International Paralympic Committee revised the classification code and significantly changed the rules for who is now eligible to compete. Now, only ten criteria enable an athlete to compete, and this revision has raised the spectre that athletes are now 'not disabled enough' to continue to compete. This raises questions: "Where does able-bodied sport end and adaptive sport begin?". I decided to test this question by rolling onto the hardwood myself.

I consider myself a coordinated and athletic individual. Society would consider me able-bodied. I have played multiple competitive sports throughout my life, including basketball, during high school and university. I continue to embrace exercise and physical fitness, practising what I preach: that 'exercise is medicine' and 'motion is lotion'. However, my experience trying to play wheelchair basketball was one of the most humbling opportunities I have ever had in my sporting career. Navigating the chair in a straight line was challenging enough. Adding the ball and having to dribble with some measure of purpose: I was pathetic. My free throws could not get the ball anywhere near the basket. After two exhausting hours on the court, I made a whopping total of two baskets!

In this edition of the Fast Break, the first selected publication of interest explores the idea of reverse integration, including able-bodied athletes into disability sports, to improve inclusion in society through WCBB. This edition of the Fast Break will focus on medical, injury and training aspects of wheelchair basketball. I challenge everyone reading this to slip into a chair and humble yourself by giving WCBB a try.

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IN THIS ISSUE

SELECTED PUBLICATIONS OF INTEREST

Sport Participation for People with Disabilities: Exploring the Potential of Reverse Integration and Inclusion through Wheelchair Basketball.

Ramsden R, Hayman R, Potrac P, Hettinga FJ. International Journal of Environmental Research & Public Health. 20(3), 2023 01 30.

Reverse integration is defined as the inclusion of able-bodied people into disability sport. For decades, there have been movements towards integrating people with a disability in mainstream society. There has been a lack of research supporting the movement of able-bodied involvement in disability sport, known as reverse integration. In this study, the real-life experiences, and motivations of 11 national wheelchair basketball players (four able-bodied and seven with a disability) were explored, identifying the potential of reverse integration and what influenced the players involvement. Thematic analysis was employed using a deductive approach. The social-relational model was used as a framework to help interpret the findings. The results highlighted that health and social benefits were key factors towards prolonged engagement in wheelchair basketball, and it was reported that reverse integration led to an increased mutual understanding of the impact of (dis)ability. All participants reported positive experiences and supported able-bodied involvement, suggesting that able-bodied players play a key role and help to grow the sport locally. However, involvement of able-bodied players was not supported at international level. This challenges the concept of inclusion at higher level and whether the sport could be more inclusive. These findings could provide direction to coaches and policymakers for developing further inclusive opportunities at all levels. Further research may explore coach education programs and learning experiences of becoming an inclusive coach to ensure coaches know how to create, stimulate and coach in inclusive sport environments.

Epidemiology of Injuries in Wheelchair Basketball: Trauma Versus Overuse Mechanism and Prevention Rehabilitative Strategies

Farì, G.; Macchiarola, D.; Caforio, L.; Megna, M.; Ranieri, M.; Quarta, F.; Bianchi, F.P.; Cutti, A.G.. Journal of Prosthetics and Orthotics, 1 January 2023, 35(1):32-37

Wheelchair basketball (WB) is one of the most practiced sports among people with disabilities worldwide. There is a lack of data in scientific literature about injuries in sports for disabled people compared with able-bodied sports. The aim of this study is to investigate the epidemiology of injuries in professional WB athletes in an Italian cohort, distinguishing between trauma and overuse lesions and discussing the role of rehabilitation to prevent them.

MATERIALS AND METHODS The design is that of a cross-sectional study. An online survey was distributed to a group of Italian WB athletes competing in the first and second division of FIPIC (Wheelchair Basketball Italian Federation). The survey included demographic data, medical diagnoses, and athletes' injuries history. The sample size consisted of 104 players.

RESULTS Forty-six injuries were reported. Of these, 32/46 (69.6%) were traumatic injuries and 14/46 (30.4%) were overuse injuries. The incidence of tendinopathies and fractures was significantly higher than for other injuries ($P < 0.0001$). Right shoulder ($P < 0.0001$), right hand ($P = 0.002$), and left hand ($P = 0.041$) injuries incidence was higher than any other injury in a statistically significant manner. The traumatic injuries group had a statistically significant difference in terms of days of suspension from sport activities compared with overuse injuries

group (traumatic: median, 30; interquartile range [IQR], 14.5–40.0; range, 1–730 vs. overuse: median, 20.5; IQR, 10–21; range, 1–30; ***P*** = 0.006).

CONCLUSIONS Trauma injuries are more common than overuse injuries. Injury prevention strategies should be based on rethinking protection devices technologies and integrating sport activities into a tailored rehabilitation global project that considers each athlete's functional impairment and needs.

Injuries in Wheelchair Basketball Players: A Systematic Review.

Sa K, Costa E Silva A, Gorla J, Silva A, Magno E Silva M. International Journal of Environmental Research & Public Health, 19(10), 2022 05 11.

BACKGROUND: Sports injuries have physical and psychological effects that negatively affect sports performance. Although there are data available on sports injuries in wheelchair basketball, some aspects need to be clarified, such as the location, mechanisms and risk factors for injury, which are not well described due to variations and/or a lack of definition of injury. The aim of this study was to determine epidemiological information, primary injury characteristics and affected body regions in wheelchair basketball players; Methods: The PubMed, Science Direct, Scopus, Web of Science and Google Scholar databases were used; Results: eight articles were included in this review. The shoulder was the body region most affected (N = 60; 22.1%). When divided by body segments, the upper limbs were the most affected (N = 128; 47.2%), followed by the head and/or face (N = 53; 19.5%), trunk (included spine and ribs) (N = 48; 17.8%) and lower limbs (N = 42; 15.5%); Conclusions: wheelchair basketball players suffer a large number of injuries with different characteristics that are mainly linked to biomechanics and sport. These results can be used to guide coaches in structuring training to minimize recurring injuries, in addition to assisting in the organization of medical teams in competitions.

Could the Improvement of Supraspinatus Muscle Activity Speed up Shoulder Pain Rehabilitation Outcomes in Wheelchair Basketball Players?.

Fari G, Megna M, Ranieri M, Agostini F, Ricci V, Bianchi FP, Rizzo L, Fari E, Tognolo L, Bonavolonta V, Fiore P, Reis VM. International Journal of Environmental Research & Public Health, 20(1), 2022 12 24.

Shoulder pain (SP) is a common clinical complaint among wheelchair basketball (WB) players, since their shoulders are exposed to intense overload and overhead movements. The supraspinatus tendon is the most exposed to WB-related injuries and it is primarily responsible for SP in WB athletes. In these cases, SP rehabilitation remains the main treatment, but there is still a lack of specific protocols which should be customized to WB players' peculiarities and to the supraspinatus muscle activity monitor, and the improvement of rehabilitation outcomes is slow. Thus, the aim of this study was to verify if the improvement of supraspinatus muscle activity, monitored in real time with surface electromyography (sEMG) during the execution of therapeutic exercises, could speed up SP rehabilitation outcomes in WB players. Thirty-three athletes were enrolled. They were divided into two groups. Both groups underwent the same shoulder rehabilitation program, but only the Exercise Plus sEMG Biofeedback Group executed therapeutic exercises while the activity of the supraspinatus muscles was monitored using sEMG. Participants were evaluated at enrollment (T0), at the end of 4 weeks of the rehabilitation program (T1), and 8 weeks after T1 (T2), using the following outcome measures: supraspinatus muscle activity as root mean square (RMS), Wheelchair User's Shoulder Pain Index (WUSPI), shoulder abduction, and external rotation range of motion (ROM). The Exercise Plus sEMG Biofeedback Group improved more and faster for all the outcomes compared to the Exercise Group. The

monitoring and improvement of supraspinatus muscle activity seems to be an effective way to speed up SP rehabilitation outcomes in WB players, since it makes the performance of therapeutic exercise more precise and finalized, obtaining better and faster results in terms of recovery of shoulder function.

Fluid Balance and Thermoregulatory Responses during Wheelchair Basketball Games in Hot vs. Temperate Conditions.

Grossmann F, Perret C, Roelands B, Meeusen R, Flueck JL. Nutrients. 14(14), 2022 Jul 17.

The impaired vaso- and sudomotor functions limit sweat capacity in individuals with a spinal cord injury (SCI) and might increase the risk for heat-related illness and decreased performance, especially in hot conditions (HOT). This study investigated the differences in fluid balance and thermal responses between wheelchair basketball (WCB) games in HOT and temperate conditions (TMP). Eleven male WCB athletes (39.8 y, 82.8 kg) with SCI (lesion level C5-L4) participated, five in HOT (31 degreeC) and eight in TMP games (21 degreeC). Fluid balance, sweat rate, body core temperature, distance, velocity and thermal sensation were assessed. The relative change in body mass was higher in the HOT group (median: -0.35%, interquartile range: 0.15%, p = 0.02) compared to TMP (+0.11%, 0.35%) group. The sweat rate was significantly higher in the HOT group (0.93 L/h, 0.58 L/h, p = 0.02) compared to the TMP groups (0.48 L/h, 0.19 L/h). Body core temperature increased significantly higher in the TMP group (1.05 degreeC, 0.15 degreeC, p = 0.01) compared to the HOT group (0.8 degreeC, 0.4 degreeC). The mean velocity (**HOT:** 1.12 m/s, 0.11 m/s, **TMP:** 1.07 m/s, 0.08 m/s, p = 0.54) did not differ between the games. The WCB game in HOT leads to significantly higher sweat rate and loss in body mass compared to TMP. Even relative body mass loss was less than 2%. Athletes thus have to be supported with enough fluid, especially during games in HOT.

Wheelchair basketball improves the treatment of urinary tract infection in people with motor disabilities: a clinical trial.

Cavalcante RN, Santos ACS, Rodrigues RAS, Napoleao ACB, Balogun SO, Andrade BRM, Fett CA, Zavala AAZ, Arunachalam K, Oliveira RG. Revista Da Associacao Medica Brasileira. 68(5):559-567, 2022 May.

OBJECTIVE: Few studies on physical medicine and rehabilitation analyze the benefit of wheelchair basketball in people with motor disabilities. Given these, this study aimed to investigate the effect of the intervention of wheelchair basketball on urinary tract infection in people with motor disabilities.

METHODS: A 12-month experimental follow-up was conducted in a single-center study. A total of 48 male individuals aged 18-55 years were allocated to the control group and experimental group. The experimental group practiced wheelchair basketball for 2 h, twice a week. Intra- and intergroup comparisons were made pre- and post-interventions over urinary tract infection.

RESULTS: There was a significant improvement in urinary tract infection and urine culture in pre- and post-intervention antibiograms, respectively. Moreover, the intergroup comparison presented a decrease in infection caused by Klebsiella pneumoniae, as well as an increase in the time variability of partially activated thromboplastin, average corpuscular hemoglobin, and hemoglobin and platelets. In the experimental group, there was an increase in hemoglobin and hematocrit and a decrease in glycated hemoglobin (%HbA1C). On the intragroup comparison, there was a reduction of triiodothyronine (T3), %HbA1C, interleukin-6 pre-intervention, and C-reactive protein post-intervention.

CONCLUSIONS: There was a decrease in urinary tract infection and improvement in biochemical, immunological, and microbiological biomarkers evaluated with physical exercise practice by wheelchair basketball, as well as by multiprofessional follow-up and health guidance.

Shoulder pain and ultrasound findings: A comparison study of wheelchair athletes, nonathletic wheelchair users, and nonwheelchair users.

Soo Hoo JA, Kim H, Fram J, Lin YS, Page C, Easthausen I, Jayabalan P.Pm & R. 14(5):551-560, 2022 05.

BACKGROUND: Shoulder pain is one of the most common musculoskeletal concerns in manual wheelchair users including among athletes. However, there is a paucity of research characterizing both shoulder pain and shoulder pathology in this population.
OBJECTIVE: To characterize and compare the prevalence of current shoulder pain and ultrasound metrics of shoulder pathology between wheelchair athletes, nonathletic wheelchair users, and nonwheelchair users.
DESIGN: Cross-sectional.
SETTING: Chicago-area adaptive sport teams/programs and musculoskeletal clinics.
PARTICIPANTS: Thirty-four wheelchair athletes, six nonathletic wheelchair users, and 12 nonwheelchair users.
METHODS: Self-reported shoulder pain was assessed by questionnaire and Wheelchair User Shoulder Pain Index (WUSPI). Shoulder physiology and pathology were assessed by physical and ultrasound evaluation of both shoulders by a sports medicine physician.
MAIN OUTCOME MEASURES: Questionnaire outcomes: Prevalence of current shoulder pain, total WUSPI score. Physical examination outcomes: total Physical Examination of Shoulder Scale (PESS) score. Sonographic outcomes: Acromiohumeral distance (AHD) and presence of shoulder pathology.

RESULTS: The majority of wheelchair athletes (68%) and nonathletic wheelchair users (67%) experienced shoulder pain since using a manual wheelchair. Wheelchair basketball players had a mean WUPSI score of 17.2 (SD = 21.8), and athletes participating in handcycling, sled hockey, and quad rugby had mean scores of 4.91 (SD = 8.32), 7.76 (SD = 13.1), and 4.29 (SD = 7.75), respectively. Shoulder pathology was observed in 14 of 31 (45%) wheelchair athletes and 4 of 6 (67%) nonathletic wheelchair users (p = .41).
CONCLUSIONS: Although wheelchair use is a risk factor for shoulder pain, participation in amateur wheelchair sports may not be associated with increased risk of shoulder pain. It is possible that overhead sports such as wheelchair basketball may define a unique high-risk group. Further study is needed to examine this relationship and to determine whether there are differences between specific wheelchair sports.

Correlations Between Medicine Ball Throw With Wheelchair Mobility and Isokinetic Tests in Basketball Para-Athletes.

Ribeiro Neto F, Loturco I, Henrique Lopes G, Rodrigues Dorneles J, Irineu Gorla J, Gomes Costa RR. Journal of Sport Rehabilitation. 31(1):125-129, 2022 01 01.

CONTEXT: A detailed analysis of wheelchair basketball skills in beginner wheelchair basketball players (WBP) can provide practitioners with important indications regarding the selection and prospective development of potential sports talents. A comprehensive WBP evaluation can be very time consuming, mainly during the initial phases of the training processes, which could be a barrier in clinical and practical settings. Moreover, the large number and the turnover of beginner WBP attending rehabilitation centers make the applicability of field and strength tests unfeasible.
OBJECTIVE: To verify the relationships between the medicine ball throw (MBT) and wheelchair basketball mobility performance field tests and the shoulder and trunk peak torque in male and female beginner WBP.

DESIGN: Cross-sectional study.

SETTING: Rehabilitation Hospital Network, Paralympic Program.

PARTICIPANTS: Thirty-seven female and male beginner WBP.

MAIN OUTCOMES MEASURES: Participants performed wheelchair basketball field tests (speed, agility, strength, and power tests) and the maximum strength test in the isokinetic dynamometer. The outcomes were correlated with the MBT results.

RESULTS: The MBT presented significantly very high and perfect correlations with all wheelchair basketball field tests assessed (5-m sprint, 20-m sprint, and zig-zag agility test with and without a ball), and peak torque (R2 ranging from .810 to .995; P <= .05) for male and female athletes.

CONCLUSIONS: The MBT, a simple and feasible test, can be used for estimating and determining the wheelchair mobility performance of female and male beginner WBP. It is suggested to measure the distance of a 5-kg medicine ball thrown by athletes during training and testing routines to follow the players' progression.

Impact of dribbling on spatiotemporal and kinetic parameters in wheelchair basketball athletes.

Chenier F, Alberca I, Marquis E, Gagnon DH, Faupin A. Clinical Biomechanics. 91:105545, 2022 01.

BACKGROUND: Wheelchair basketball is one of the most popular Paralympic sports. Dribbling a ball while propelling is a key feature of wheelchair basketball. Very few studies have investigated the biomechanical impact of dribbling. This study aims to analyze the impact of dribbling on the amplitude and symmetry of spatiotemporal and kinetic parameters of wheelchair propulsion.

METHODS: Ten experienced wheelchair basketball athletes (31.5 +/- 10.6 years old; 7 men, 3 women) with various classifications performed eight 9-m sprints along a straight line on a basketball court: four sprints using classic synchronous propulsion, and four sprints while dribbling a ball down the court.

FINDINGS: Dribbling decreased velocity, mean propulsive moments and the force rate of rise, as well as increased push time, force rate of rise asymmetry and angular impulse asymmetry. All kinetic variables were asymmetric and higher on the dominant limb.

INTERPRETATION: The combination of reduced velocity and propulsive moments when dribbling indicates that wheelchair basketball athletes may deliberately preserve a safety margin of acceleration to adapt to uncontrolled ball rebounds. Dribbling was not associated with any factors associated with an increased risk of musculoskeletal disorders.

Influence of upper-limb muscle strength on the repeated change of direction ability in international-level wheelchair basketball players.

Iturricastillo A, Garcia-Tabar I, Reina R, Garcia-Fresneda A, Carmona G, Perez-Tejero J, Yanci J. Research in Sports Medicine. 30(4):383-399, 2022 Jul-Aug.

This study aims 1) to compare repeated change of direction ability (rCODA) and bench press (BP) between low (A category, <=2.5) and high (B category, >=3.0) sport classes and 2) to analyse the relationships between rCODA and BP performance in a sample of wheelchair basketball (WB) players. Seventeen world-class WB players volunteered participated in this study. All the players undertook two tests: the repeated (x12) Modified Agility T-test (rMAT) to measure the rCODA and the movement velocity in a BP test. No significant differences were observed between categories in the rMAT and BP. For the total sample, BP variables with a mean propulsive velocity of 1 m.s-1 (V1LOAD) largely correlated with all the full rMAT outcomes (r>-0.625; p< 0.05). Having a better BP could be favourable to perform repeated efforts and this seems particularly relevant in fatigue conditions, and especially for the B category players.

Is the King-Devick Test a Reliable Tool in Wheelchair Athletes? A Preliminary Prospective Study in Wheelchair Basketball.

Richard J, Lin YS, Wernet L, Kasitinon D, Royston A, Bristow K, Garner D, Argo LR

Clinical Journal of Sport Medicine. 32(2):e134-e138, 2022 03 01.

OBJECTIVE: (1) To determine the reliability of the King-Devick (KD) test among wheelchair basketball athletes across a season and (2) to compare the KD test time changes among those with and without a clinically suspected concussion.
DESIGN: Prospective, observational study.
SETTING: Division 3 college athletics department.
PARTICIPANTS: Twenty-nine intercollegiate wheelchair basketball athletes.
INTERVENTIONS: Athletes were prospectively monitored for concussions throughout the 2018 to 2019 season. King-Devick testing was completed preseason, midseason, postseason, and after clinically suspected concussions.
MAIN OUTCOME MEASURES: Two-way random effects intraclass correlation coefficient (ICC) was calculated. Friedman's test and pairwise comparison with Bonferroni correction were used to compare for change over time. Mean KD times and changes were compared between athletes with and without suspected concussion.
RESULTS: The KD test demonstrated good test-retest reliability (ICC = 0.826). Among participants without a concussion, there was a significant decrease in the mean KD test time from preseason to midseason (-3.3 seconds; P = 0.0167) and preseason to postseason (-3.3 seconds; P = 0.0167). No change was seen from mid-to-post season. Six athletes had 7 suspected concussions. Each demonstrated an increase in the KD test time, with a mean increase from 44.3 +/- 9.5 seconds to 53.7 +/- 12.8 seconds. King-Devick test times returned to or below baseline by postseason.
CONCLUSIONS: The KD test shows good reliability among wheelchair basketball athletes without a concussion. A learning effect is demonstrated initially but plateaus on subsequent testing. Unlike athletes without a concussion, players with a clinically suspected concussion showed an increase in the KD test time.

Load-Velocity Relationship in Bench Press and Effects of a Strength-Training Program in Wheelchair Basketball Players: A Team Study.

Romarate A, Iturricastillo A, Nakamura FY, Loturco I, Rodriguez-Negro J, Granados C, Yanci J. International Journal of Environmental Research & Public Health, 18(21), 2021 10 24.

Performance in wheelchair basketball is determined by capabilities, such as strength and power. The study has two aims: first, to analyze the association between speed and acceleration variables (collected in the bench press (BP) exercise) and the distinct percentages of one-repetition maximum (1RM); second, to analyze the effect of a strength training protocol on wheelchair basketball (WB) players according to their functional impairments. Ten Spanish male WB players volunteered to participate in the study. The players did a pretest and posttest (1RM in bench press) with 6-week muscle strength intervention program. The results showed a high association between the %1RM and the mean propulsive velocity (MPV) and the maximum velocity (Vmax), both in the total of the participants, and in each separate group of athletes. After implementing the strength training program, both the players of the IWBF (International Wheelchair Basketball Federation) < 2.5 group and those of IWBF > 2.5 group improved their 1RM ($p < 0.01$, ES = 0.20 to 0.23). However, the program produced positive effects at submaximal intensities in the MPV reached with 30, 40, 70, and 80 kg and in time to maximum velocity (TVmax) with 30, 40, and 70 kg (ES = -3.24 to 1.32) only in players with greater functional impairments. The high association between %1RM and MPV and Vmax can

allow for determination the %1RM of the WB players in the BP using the MPV and the Vmax. The training program was effective in improving 1RM in both groups, while improvements in submaximal values only occurred in the IWBF < 2.5 group.

Adaptation of Anaerobic Field-Based Tests for Wheelchair Basketball Athletes.

Weber VMR, Fernandes DZ, Vieira ER, Ferreira SA, da Silva DF, Queiroga MR

Research Quarterly for Exercise & Sport. 92(4):715-722, 2021 Dec.

PURPOSE: The aim of this study was to propose field-based tests to estimate the anaerobic power of wheelchair basketball athletes. METHODS: Eleven lower class wheelchair basketball players performed the Wingate test (WT) and two field-based tests (repeated sprints) of 15 (S-15) and 20 (S-20) meters. The WT provides data in Watts (W). The S-15 and S-20 are recorded in seconds and converted to W using the Running-based Anaerobic Sprint Test (RAST) equation. The participants also completed other field-based tests, such as right and left handgrip strength (HGS) tests and the medicine ball chest pass test. In addition, body mass and height were measured, and the body composition was estimated. The field-based tests and anthropometric measures were used to estimate WT peak power (PP) and mean power (MP) using multiple linear regressions. RESULTS: The field-based tests underestimated the anaerobic power measured with the WT (in W). However, a linear regression model based on S-15 PP, right HGS, height, and body mass explained 76% (P= .040) of the WT PP variance. Another model based on S-15 MP and right HGS explained 72% (P= .006) of the WT MP variance. Both models had excellent reliability (ICC > 0.90). CONCLUSION: WT PP can be estimated using S-15 PP (W), right HGS, height, and body mass. The WT MP is predicted using S-15 MP (W) and right HGS. Therefore, a combination of field-based tests and anthropometric measures seem to be appropriate to determine anaerobic power of lower-class wheelchair basketball athletes.

Medicine Ball Throw Responsiveness to Measure Wheelchair Basketball Mobility in Male Players.

Gomes Costa RR, Dorneles JR, Lopes GH, Gorla JI, Ribeiro Neto F

Journal of Sport Rehabilitation. 30(8):1230-1232, 2021 Apr 20.

CONTEXT: Monitoring training loads and consequent fatigue responses are usually a result of personal trainers' experiences and an adaptation of methods used in sports for people without disabilities. Currently, there is little scientific evidence on the relationship between training load and fatigue resulting from training sessions in wheelchair sports. Analogous to the vertical jump, which has been associated with competitive performance and used to assess fatigue in Olympic sports, the medicine ball throw (MBT) is a fast, feasible, and accessible test that might be used to measure performance outcomes in Paralympic athletes.

OBJECTIVE: To test the MBT responsiveness to detect meaningful changes after training sessions in beginner wheelchair basketball players (WBP).

DESIGN: Cross-sectional study.

SETTING: Rehabilitation Hospital Network, Paralympic Program.

PARTICIPANTS: Twelve male WBP.

MAIN OUTCOMES MEASURES: The participants performed 3 consecutive days of training sessions involving exercises of wheelchair basketball skills, strength, and power. The MBT test was performed pre and post training sessions.

RESULTS: The smallest worthwhile change for MBT was 0.10 cm, and the lower and upper limits were 3.54 and 3.75 m, respectively. On the first day, the MBT started below the smallest worthwhile change lower limit and increased above the upper limit (3.53 and 3.78 m, respectively). On the second day, the MBT pretraining and posttraining session results were near the sample mean (3.62 and 3.59 m, respectively). On the third day, the WBP started the MBT test training higher than the upper limit (3.78 m) and decreased to near the mean (3.58 m).

CONCLUSIONS: During 3 consecutive days of training sessions, the magnitude-based inference model presented meaningful changes in MBT test performance. The accurate association of the magnitude-based inference model with the MBT allows coaches and sports team staff to interpret the correct magnitude of change in WBP performance.

Measuring Trunk Stability for Wheelchair Basketball Classification: A New Field Test.

Rehm, Jared M.; Jagodinsky, Adam E.; Wilburn, Christopher M.; Smallwood, Lorraine L.; Windham, Jerrod B.; Weimar, Wendi H. Clinical Kinesiology, Spring2019; 73(1): 1-7.

ABSTRACT: Purpose: Currently, wheelchair basketball classification is conducted by subjective means. The current study is a step towards an objective measure of trunk function to be utilized for wheelchair basketball classification. The measure is a field test that could be easily transported to competition locations. Methods: 10 people with disability and 10 people without disability were recruited to participate. The participants sat upon a constructed seat and pushed a force gauge against a wall. The constructed seat had a removable backrest. The participants pushed against the wall with and without support in 3 directions (front, left, and right). The loss in support was calculated to a percentage of the with support condition force measure. This percentage became a trunk stability score. Surface electromyography was utilized to measure the bilateral activity of the pectoralis major, rectus femoris, rectus abdominus, and erector spinae. RESULTS: A significant group difference in the trunk stability score was found (PWD = 27.40 ±2.91, PWOD = 16.67 ±2.91, p=.018). The group with disability produced similar force to those without disability in the support conditions (PWD = 255.97 N ±95.57, PWOD = 238.87 N ±71.27, p=.082). The group with disability produced less force in the without support conditions (PWD = 145.47 N ± 58.40, PWOD = 160.2 N ±38.32, p=.082) Conclusion: The proposed field test is able to detect differences in trunk stability. More research is needed to find the ability of the test to stratify across enough functional levels to be used for wheelchair basketball classification.

LET'S CHAT ABOUT…

Let us know what is on your mind, what you want to chat about in the next issue of the Fast Break.

Email medical@FIBA.basketball

I was recently contacted by Dr. Chanda, the director of the Medical Commission for the Zambia Basketball Federation. He was inquiring if the FIBA Medical Commission has any online or virtual continuing medical education (CME) programs or opportunities available. When I started in this role to revamp and edit the Fast Break, I had considered adding a section that would outline basketball and sport medicine CME events, however I was not sure how/where I would look to find these various opportunities around the globe, so I left this out of the quarterly editions of the Fast Break.

With respect to the FIBA offerings, Dr. Pete Burt has advised, "At present we don't have a formal CME process but that is something we are working towards. Currently we have the FIBA Medical Commission document written in 2017 and available on our website, as well as the current website content, and the records [of the] webinars from March. We have also done two webinars to the Africa zone one in English one in French. Our plans moving into the next 2 years are to land the mental health role of the team doctor web content combined with a webinar from our two experts. We aim to [produce] that late October/November [and will be available] all globally in the medical basketball community. It will be very interactive [question and answer] style, an it will also be recorded. We will be integrating updated content for the new FIBA website approximately at same time as Paris [2024 Olympics]. The new format should offer us greater flexibility and a more user-friendly journey. We are also growing our database and plan longer term to add more webinars and content globally."

Dr. Chanda's urging has helped to create the new section of this publication entitled 'Basketball and CME Opportunities'. This is not an exhaustive listing, rather I have simply made an online search to see what is currently published for CME and basketball educational events. I will endeavour to keep this updated each quarter; if you know of any meetings or conferences in your area and you would like to have it listed in the next edition of the Fast Break, please email me at medical@FIBA.basketball.

FROM THE HISTORY BOOK

In 1945, British neurologist Sir Ludwig Guttmann developed wheelchair netball at the Stoke-Mandeville rehabilitation hospital for spinal injury, as a form of rehabilitation for World War II wounded servicemen. This grew into the game we now know as wheel-chair basketball.

Source: Wikipedia

Wheelchair basketball began in the USA in 1946 with the World War II veterans first competing against the doctors who worked in the veterans' hospitals.
Source: Smithsonian Magazine

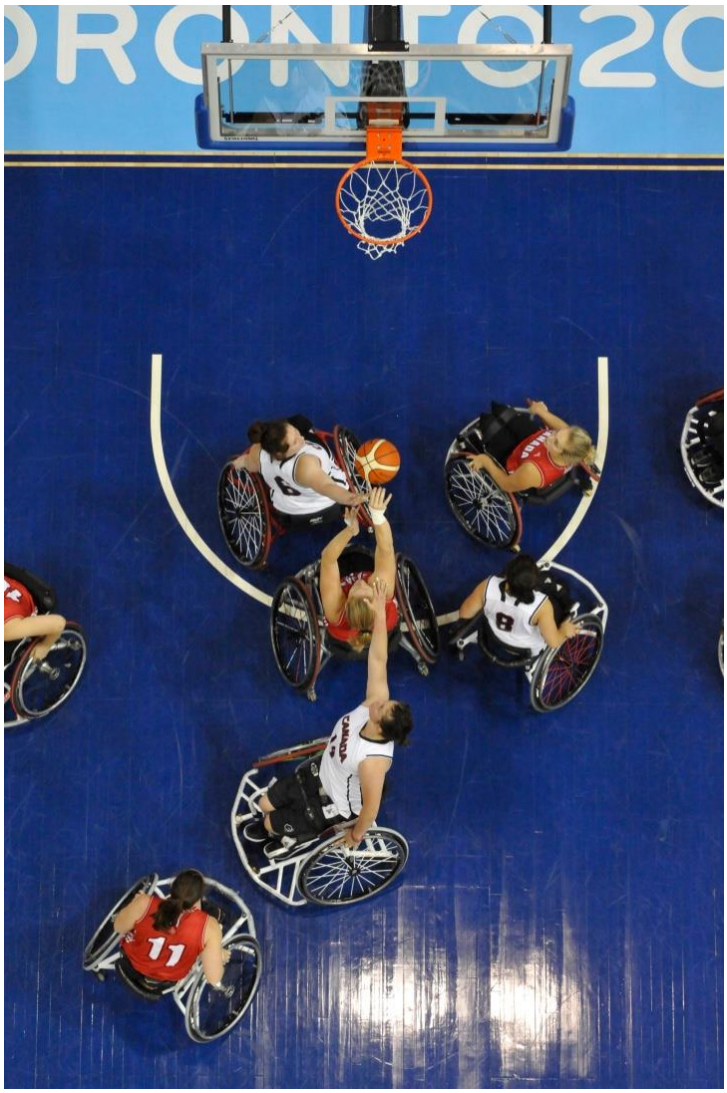
WCBB for women emerged in the mid-1960's, but because there were only men's leagues, they competed with the men's teams.

SHARE YOUR PHOTOS

Please send us your funny, interesting, or remarkable basketball pictures that we can share with the medical and sport science basketball community.

Email: medical@FIBA.basketball

Photo submitted by Dr. Richard Goudie, Team Canada wheelchair basketball team physician.



THE STUDENT'S CORNER

This space is intended for sport science and medical students, residents, and fellows to contribute to our knowledge and conversation.

Please encourage your students to contribute to the Fast Break on a topic of their choosing related to basketball injury, rehabilitation or sport science. The work published here is reviewed and approved for submission by the student's preceptor.

Unfortunately, this edition did not have any student submissions for our edification.

BASKETBALL CME OPPORTUNITIES

A listing of varied sport medicine and basketball meetings and conferences you may be interested in attending:

British Association of Sport and Exercise Medicine, October 5-6, 2023, Manchester, ENGLAND
https://basem.co.uk/event/basem-2023-annual-conference/

Australasian College of Sport and Exercise Physicians Annual Scientific Conference, November 9-11, 2023
https://www.acsep.org.au/page/events/annual-scientific-conference-2023

Medica Medicine and Sports Conference, November 13-16, 2023, Dusseldorf, GERMANY.
https://www.medica-tradefair.com/en/Program/Conferences/MEDICA_MEDICINE_SPORTS_CONFERENCE

International Conference on Sport Medicine and Sport Physical Therapy, February 26-27, 2024, Sydney, AUSTRALIA

https://waset.org/sports-medicine-and-sports-physiotherapy-conference-in-february-2024-in-sydney?utm_source=conferenceindex&utm_medium=referral&utm_campaign=listing

American Medical Society for Sports Medicine Annual Symposium, April 28-May 3, 2024, Phoenix, Arizona, UNITED STATES OF AMERICA.

https://annualmeeting.amssm.org

Canadian Academy of Sport and Exercise Medicine Annual Symposium, May 28-31, 2024, Niagara Falls, Ontario, CANADA.

https://casem-acmse.org/annual_symposium/2024/

American College of Sports Medicine Annual Symposium, May 28-31, Boston, Massachusetts, UNITED STATES OF AMERICA

https://www.acsm.org/annual-meeting/future-past-meetings/future-annual-meetings

European College of Sport Science, July 2-5, 2024, Glasgow, SCOTLAND.

https://www.acsm.org/annual-meeting/future-past-meetings/future-annual-meetings

The South African Sports Medicine Association hosts several events throughout the year:

https://www.sasma.org.za/events/

And for something a little different:

https://unconventional.com.au/conferences/south-america/medical-conferences/2024/

International Conference on Recent Advances in Basketball Science, December 2023, Cairo, EGYPT. April 2024, Athens, GREECE https://waset.org/recent-advances-in-basketball-science-conference