

Progress benchmarking and test system to manage competitive fitness in para sports

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Abstract

Objective of the study was to develop and scientifically substantiate a new progress benchmarking and test system for Para sports.

Methods and structure of the study. The progress benchmark systems should be designed to facilitate competitive progress by the training goals set versus the sport-specific competitive performances of the best Paralympians with account of the sport functionality classifications (mentally retarded sports, blind sports, musculoskeletal disability sports, etc.). The study analyzes benefits of a new progress benchmarking and test system to manage competitive fitness in Para sports, customizable for every Para sport discipline and sports functionality (nosological) class.

Results and conclusion. The new progress benchmark and test system was tested in application to Paralympic judo, athletics and sledge hockey. The test data and analysis have been proved beneficial for the progress benchmarking, training system management and competitive success. The Para sports competitive fitness and training system benchmarking database and practical training and competitive performances and progresses profiling data demonstrated benefits of the progress benchmarks and tests for the training system individualization purposes with due sensitivity to specific sport functionality classes and progress needs.

Keywords: *Para sports, progress benchmarks, training system, theoretical and practical provisions.*

Background. For the last few years of the pandemic-caused crisis, the global sports have been seriously stalled due to many regular top-ranking events being postponed or canceled, with the relevant detrimental effects on the training systems and calendars in many sport disciplines. This situation needs to be addressed by different instruments including progress benchmarking systems for Para sports to timely test and manage the competitive fitness [2]. Such progress benchmarks with tests should help rate the current performance at every stage of the training system using a wide range of competitive fitness tests and analyses with due psychological, didactic and communication tools.

Objective of the study was to develop and test benefits of a new progress benchmarking and test system for Para sports.

Methods and structure of the study. The progress benchmark systems should be designed to facilitate competitive progress by the training goals set versus the sport-specific competitive performances of the best Paralympians with account of the sport functionality classifications (mentally retarded sports, blind sports, musculoskeletal disability sports, etc.). The progress benchmarks system will include a set of adjustment coefficients to effectively customize it to the age, disability, skill level and other groups, with every progress benchmarks used not only to track absolute growths but also assess the



progress potential in every competitive fitness element.

Such progress benchmarks will set a framework for the relevant psychological and physical progress test data and analyses to effectively manage the training system and competitive performance for success in every Para sports discipline. The valid progress benchmarking and test systems of the national Paralympic sports teams with its theoretical and practical provisions are designed to [1]:

- Rate the general and special fitness versus the Federal Sports Training Standards by a set of special test exercises to analyze an individual competitive resource of every Paralympian;

- Analyze performance in the training process using the individual diaries and training system design and management reports, and verify them by surveys and interviews of the coaching teams;

- Rate and analyze the technical fitness using efficient digital video data processing tools;

- Rate and analyze physical working capacity and cardiovascular system functionality to profile the individual adaptability and find potential reserves; and

- Rate and analyze psycho-physiological fitness.

Knowing the key training conceptions and specific requirements of the modern Para sports, we may customize every progress benchmarks set to the training system based on the progress analysis. A complete progress benchmarks system will offer a special sequence/ procedure to select the most efficient progress benchmarks and test set for a specific Para sports group.

First the progress benchmarks system will analyze standards for the Para sport discipline in a wide range of the modern mentally retarded, blind, musculoskeletal disability and other sports, with account of the nosological groups (diagnoses). Next the progress benchmarks system will be customized to the training system stage versus the relevant Federal Sports Training standards and the actual skill level/ qualification. Then the system will select the most beneficial test set based on the practical experience and research recommendations; and use the most advanced test equipment to efficiently excel the Para sports training system as recommended by the innovative solutions of the sports science. Most of the existing progress benchmarks methods need to be customized to the training system progress stage, competitive fitness needs and schedules and the relevant Para sports functionality class. The above progress benchmarks

system formation logics will help set the efficient individual/ group progress benchmarks with sound recommendations and correction patterns for the training system for competitive success. Progress tests and analyses will then be made to timely rate progresses in the training system by the test set versus the individual progress benchmarks. Our research projects made it possible to develop an innovative combined physical fitness and progress test and benchmarking system and test it in a few practical Para sports training systems.

Results and discussion. Having tested our new progress benchmarks and test system in a few Para sports, we collected a competitive performance database. Our Para sports training and competitive performance tracking data outlined hereunder demonstrate that the individual progress benchmarks, test, training and competitive performance systems need to be customized to the actual individual diagnoses in Para sports.

This in case of Para athletics we sampled a musculoskeletal disability group (n=16) of athletes and rated their individual psycho-physiological fitness using a gas-discharge visualizing test system by the morning and evening tests. The competitive performance was rated by a questionnaire survey on 11 progress scales. The study made it possible to find the key competitive progress benchmarks and make individual competitive performance recommendations for every athlete.

In case of Para sledge hockey, we used SIGVET-TEAM test system made by St. Petersburg Research Institute of Physical Culture to rate and correlate the pacing-rhythmic patterns in the teamwork, individual contributions, leadership qualities, proneness to individualism/ collectivism, and psycho-emotional control skills and activity in a team of up to 10 players [3]. The test data were used to rate the psycho-physiological compatibility in the 13-16-year-old SKA-Arrow Para sledge hockey team (n=5+5). The tests and analyses found the teamwork being good enough to efficiently model and control the competitive performance as verified by the visual-motor response and response-to-moving object tests.

In case of blind and partially sighted judo, our study was designed to test contributions of unconscious and conscious key psycho-physiological responses of the nervous system as markers of the individual psycho-physiological fitness for competitive success. The study was timed to the precompetitive training stage of the 23-45 year-old Russian national blind and par-



tially sighted judo team (n=16, 6 women and 10 men) including two HMS, seven WCMS, four MS and three CMS – that accounted for 70% of total formal blind and partially sighted judo team list at that time.

The above blind and partially sighted judo team tests and analyses found the competitive performance determined the now-fear mindsets in fights with knowingly stronger opponents; low exposure to the prestart fever or apathy; stress tolerance of the autonomic nervous system; and the ability to cope with negative experiences and hard physical and mental competitive stressors. The Para judo group was tested with the excellent precompetitive physical and mental resource mobilizing skills; high determination with the ability to concentrate when needed to correct errors and come back, cope with negative emotions and mobilize for competitive success.

Conclusion. The new progress benchmarking and test system for Para sports implies the following procedure to have it customized to every Para sport discipline:

- Rate it for the Para sports functionality (nosological) class;
- Customize to the training system stage and group progress in the multiannual training context;
- Select the best test set;
- Apply the best modern test technologies;
- Develop the individual/ group progress benchmarks; and
- Come up with recommendations on how the training system should be exceeded.

We believe that new developments in the progress benchmarks and test systems to facilitate trainings and competitive performance in Para sports customizable for the individual sports functionality classes/ diagnoses may be highly beneficial for competitive progress in every Para discipline.

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