



Measurement Properties of Athlete Monitoring Tools – how to use the proposed framework and make data driven decisions

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Monitoring an athlete's availability to participate in training is critical information for practitioners and sport scientists. An athlete's availability to train depends upon factors including well-being, injury status and historical exposure to the volume, type and intensity of physical training. The amount of work performed during a physical training session is termed athlete load. Quantifying the load of a team-sport athlete is important to monitor and prescribe subsequent training sessions. Athlete training load can be categorised according to external load, or the work an athlete has completed and internal load, or how an athlete felt after a given load. External load can be captured during on-field training sessions, via global positioning systems (GPS) or local positioning systems (LPS) for example. During off-field training, for example resistance sessions, the speed of the barbell during a lift can be obtained to examine the load velocity relationship.

The ability of an athlete to recover from a given training load and be ready for the next training session or match is also important. Musculoskeletal screening tests may provide an indication of an athlete's ability to tolerate an acute physical training stimulus. For example, testing an athlete's hip adduction and abduction strength provides an indication of an athlete's maximal voluntary force and may be used to monitor response to training. To identify meaningful change in an athlete's response to training, the measurement error associated with each monitoring tool should be considered. Recently, a framework of 20 measurement properties and feasibility items was published for sport science practitioners and researchers to assess the reliability, validity, feasibility and responsiveness to change of athlete monitoring tools.

In this presentation, a framework of 20 measurement properties and feasibility items will be presented to determine the reliability, relatedness and feasibility of athlete monitoring systems within the constraints of a team-sport setting. The application of this framework and how data may be analysed for decision making will also be examined. For example, automated decision support tools that utilise machine learning may be of use for sport science practitioners and researchers to assist in making decisions on individual athlete training availability. Decision support tools will be discussed on how to make more effective decisions or recommendations on an individual athlete's training availability, for example.