

Designing a Return to Training Model for Professional Athletes after Sport Injury

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Abstract

Rehabilitation for return to training is an interdisciplinary, specific and individualised process to achieve optimal availability for competition after an athlete's sports injury. This process requires a transversal, specific, progressive and previously planned design. The model will be individualized according to the injury, the athlete, the sport and its competitive schedule. The design is divided into 3 different phases and the duration of each one will be determined by premises previously set out for the achievement of specific clinical and conditional goals. Decision making process is assessed by objective information, but performance on professional context is a key factor to consider.

Keywords: Specificity; Functionality; Progression; Programming; Periodization; Interdisciplinary

Introduction

Training load management and injury prevention protocols become integrated elements on the training process [1]. Nevertheless injuries continue to occur because certain levels of risk are intrinsic to the practice of sport [2].

Once the athlete is injured the rehabilitation to process to return to training period begins. After providing an exact medical diagnosis, second step is the design of a biopsychosocial working model to confront the complex [3] process of recovery of injured sportsmen until their return to play. This process is specific to each athlete, injury and sport [4] and can be influenced by many different factors not only clinical but also involving coaches, clubs and, of course, the athlete himself [5].

The present proposal presents an interdisciplinary, cross-sectional and concurrent view of how to face up to the challenge presented whenever an athlete is injured.

Definitions

Rehabilitation for return to training has been defined as the interdisciplinary, specific and individualised process to achieve optimal availability for competition after an athlete's sports injury [4].

This process performs between medical discharge and the return to full involvement in sport. Medical discharge marks the healing of the athlete's injury, as well as full functionality. In contrast, the athlete will receive the all-clear for sport when is fully able to compete. Both will be decided by the physician [6].

Professional Framework

This rehabilitation process is led by a physician specialised in sports medicine, responsible for the medical diagnosis, treatment guidelines as all the information actuations required during the process. The physiotherapist is focus on the rehabilitation and functionality of the injured area. And finally, the specialist in sports science and performance design programs and manage load to achieve general to specific adaptations and the optimal conditioning for competition.

According to its interdisciplinary training and skills, the figure of the sports therapist could undertake a significant proportion of the process.

During the injury rehabilitation period, the psychological management is required, and all professionals involved need a high degree of personal dedication. For an indefinite period the athlete's body, seen as a working tool as well as of expression, is not being capable of this. A holistic and transversal model, including wellness and stress management [7] has to be individually planned.

Description of the Working Model

Main concepts and variables inherent in the injury that must be monitored and assessed at all times, and they are: the perception of pain [8,9], defined as asymptomatic, educating the athlete in its management as in the expression of perceiving it [10,11]; personal trust between the athlete and all the professionals involved; and setting specific, short term and achievable goals to prevent and challenge on the day by day motivation and concentration [4].

Optimal injury rehabilitation for sport performance requires being individualised, and specific to the sport practised and to its competition schedule [3]. The model must be previously planned in an individual and progressive context [4,12]. Including the acute: chronic workload ratio (ACWR) on that model it's a key tool to manage and reduce risk during all the return to play process, specially avoiding load "spikes" (>1.5 ACWR) during this period [12]. This periodisation design is a complex process that integrates conditioning adaptations, workout programming, the physical and cognitive complexity of exercises and the specificity of the drills [1,12,13]. Always following sport physician

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guidelines and timing, the design must to achieve the same competition patterns [9,11,14], which will define the thresholds, in terms of functional quantity (load) and quality (intensity) [1,12]. Prevention protocols, both general and specific, can't be avoided on the design.

The design must be open and it's divided into 3 different phases [4] and the duration of each one will be determined by premises previously set out for the achievement of specific clinical and conditional goals [15]. At first phase, orientation will be of a general nature: development of basic conditional and cognitive capacities required for the type of sport practised is the main goal [16]. During this first stage physiotherapist and sports sciences specialists might work in a close bases, to achieve all the structures damaged work in a asymptomatic context and that they recover fully on this first increasing load period. The second phase is aimed at increasing functionality, intensity and load, already directed to the sports specific conditioning needs and drills. Workouts and training are functional, oriented to the sport motions [3] and at its specific facility or surfaces. Finally, the third phase will aim to reach competition intensity and loading, this progression had to be achieved with the gradual entry of the athlete into different phases of training sessions with the team, according to the ACWR premises [12]. Intensity will increase progressive, not just in terms of execution, as well in tactical decisions. For collective sports, the players need to achieve and perform properly 1x0 situations previous to small games (from 1×1 to 2×2 to 4×4 for basketball or 5×5 or 7×7 in the case of soccer). This phase use to be the longest and most open one, due it is determined in terms of performance once there is objective information [2] to consider the functional and conditioning goals achieved [1]. Decision making process are assessed by medical test, needed to allow the athlete to return to play [16,17] and concurrent technology allows to get both internal and external load information, comparing previous values before and after the injury [4,16]. But at that point, availability is not just determined by physicians and athlete's [17]; it is as well challenged by coach perception, player expertise and competitive rhythm.

Conclusion

The rehabilitation process for return to training after a sports injury has to be designed according to a biopsychosocial model. Its aim is to recover athlete's optimum availability for competition. The model clearly defines the roles of each professional involved, where communication and trust between them and the athlete have to be continuous. The management of deadlines, periodisation, programming, progression and achievable goals design are all essential elements for the injury rehabilitation, which requires specific, reliable and reproducible tests that will facilitate an objective decision making process.

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