

## Rehabilitation is the Critical Ingredient to Optimize Return to Sport in Athletes



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**Abstract:** Medical providers, rehabilitation specialists, and researchers must incessantly refine and adjust specific protocols, understanding that rehabilitation is *the* critical ingredient for return to sport in athletes. This month introduces a Special Issue in *Arthroscopy, Sports Medicine, and Rehabilitation* entitled “Rehabilitation and Return to Sport in Athletes.” The articles have been authored by invited experts and rehabilitation specialists deemed thought leaders. The goal of the issue is to provide readers, researchers, and clinicians high-yield and high-impact articles that will optimize return to sport in athletes. For athletes, and non-athletes alike, there lies an essential quartet for recovery: 1) correct diagnosis, 2) restoration of anatomy, 3) biological healing, and 4) functional rehabilitation. Most importantly, a coordinated rehabilitation program must be chosen with appropriate specialization to synchronize the return to play. This Special Issue explores specific rehabilitation paradigms regarding return to sport using evidence-based medicine with support from literature to optimize the functional return of athletes.

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**I**t *almost* goes without saying that rehabilitation is a critical ingredient for return to sport in athletes. We say *almost* because many of us, perhaps, fail to stress this paradigm enough to our patients recovering from injury and/or surgery before they return to play. *Almost* because we may all be guilty of forgetting to follow a coordinated, research-driven algorithm directed by a rehabilitation specialist. Once we have made our diagnosis and have verified that anatomy has been restored (with or without surgery), we send athletes on their not-so-nimble way to recover, *almost* forgetting the exact nuances of the protocols and modalities that will ensure their optimal return to their field, court, pool, course, track, or other venue of choice. As medical providers, rehabilitation specialists, and researchers, we must incessantly refine and adjust specific protocols, understanding that rehabilitation is *the* critical ingredient for return to sport in athletes.

This month’s Special Issue in *Arthroscopy’s* companion, peer-reviewed, and open-access journal *Arthroscopy, Sports Medicine, and Rehabilitation (ASMAR)* is entitled “Rehabilitation and Return to Sport in Athletes.” Although *ASMAR* lists “rehabilitation” at the *end* of its title, here we are stressing it as the foremost ingredient. The 32 articles included have been authored by invited experts and rehabilitation specialists deemed to be thought leaders in their field. The goal of the issue is to provide readers, researchers, and clinicians with high-yield and high-impact articles that will optimize

return to sport of athletes. This compendium comprises up-to-date techniques and modalities in therapy supported by the literature to optimize function and recovery.

For athletes, and non-athletes alike, there lies an essential quartet for recovery: 1) correct diagnosis, 2) restoration of anatomy, 3) biological healing, and 4) functional rehabilitation. An accurate diagnosis is compulsory to make appropriate treatment plans, without which the patient is sent on a circuitous, potentially risky path. Precise restoration of anatomy may be required with or without surgery to restore proper biomechanics. An appropriate milieu must be provided for biologic healing. And most importantly, a coordinated rehabilitation program must be chosen with appropriate specialization. This quartet must be synchronized to yield optimal return to sport, work, or daily activities. Perhaps a preferred choice to “return to sport” is the term “return to function” whether it be sport or work, young or old, female or male, and novice or professional.

This *ASMAR* Rehabilitation and Return to Sport Special Issue highlights a wide range of topics focusing on general rehabilitation principles, timing, coordination, and implementation while also delving into specific care modalities. In addition, there are age and gender considerations, sport-specific emphases, and level of participation, such as recreational versus professional. Specifically, the general topics include a holistic approach to an injured athlete,<sup>1</sup> a “continuum” approach of return to sport in professional athletes,<sup>2</sup> defining “failed conservative management” for appropriateness to surgery,<sup>3</sup> and a general overview of strength and power testing.<sup>4</sup> Expert opinion delving

into specific modalities include blood flow restriction<sup>5,6</sup> in the proximal and distal aspect of a limb, dry needling,<sup>7</sup> and antigravity training techniques in runners.<sup>8</sup> Rehabilitation and return to sport in women athletes are tackled generally<sup>9</sup> and female overhead athletes are addressed specifically,<sup>10</sup> highlighting the particular needs of their recovery. Sport- and work-specific functional recoveries are detailed among trail runners,<sup>11</sup> soldiers,<sup>12</sup> pilots,<sup>13</sup> and softball players.<sup>14</sup> Hip rehabilitation and return to sports address functional movement assessment and clinical decision making,<sup>15</sup> rehabilitation after gluteus medius and minimus tears,<sup>16</sup> capsulolabral adhesions and reducing the revision rate for hip arthroscopy,<sup>17</sup> and advanced rehabilitation after arthroscopy for femoral acetabular impingement.<sup>18</sup> Specific anterior cruciate ligament (ACL) injury topics compose prehabilitation before surgery,<sup>19</sup> contemporary principles,<sup>20</sup> ACL testing,<sup>21</sup> how rapidly to return to sport after ACL reconstruction,<sup>22</sup> and the use of anterolateral ligament augmentation.<sup>23</sup> Two papers spotlight ACL reconstruction rehabilitation in the pediatric<sup>24</sup> and adolescent<sup>25</sup> populations, with the latter focusing on self-identity. Several articles summarize additional knee pathology topics pertaining to return to sport after cartilage restoration procedures,<sup>26</sup> anterior knee pain with a biomechanical perspective,<sup>27</sup> medial patellofemoral complex reconstruction,<sup>28</sup> and multi-ligament knee reconstruction.<sup>29</sup> Finally, a foursome of papers delivers perspectives on shoulder pathology including return to sport after shoulder stabilization procedures,<sup>30</sup> upper extremity injury,<sup>31</sup> thoracic outlet syndrome,<sup>14</sup> and a biomechanical analysis of the throwing athlete.<sup>32</sup> This Special Issue primer is a go-to resource to help clinicians implement insightful change now.

Taken in sum, this Special Issue explores specific rehabilitation paradigms regarding return to sport using evidence-based medicine with support from the literature to optimize the functional return of athletes.

From surgeons' personal perspectives, we owe the success of patient care mostly to our rehabilitation colleagues; without them our interventions would never have reached their potential and athletes would not have scaled their pinnacle of performance. So, seek out your rehabilitation specialists and friends: physical and occupational therapists, massage therapists, athletic trainers, etc. Furthermore, we invite these specialists to submit future research to ASMAR. This team approach coupled with contemporary, research-supported rehabilitation protocols and techniques will aid patients' return to optimal function not *almost* all of the time, but *all* of the time.

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