

Quality of Life and Recovery

By: [Tsz Lun \(Alan\) Chu](#), Robert J. Harmison, Scott B. Martin

Chu, T. L., Harmison R. J., & Martin, S. B. (2023). Quality of life and recovery. In M. Kellmann, S. Jakowski, & J. Beckmann (Ed.), *The importance of recovery for physical and mental health: Negotiating the effects of underrecovery* (pp. 85–100). Routledge.

This is an Accepted Manuscript of a book chapter published by Routledge/CRC Press in *The Importance of Recovery for Physical and Mental Health: Negotiating the Effects of Underrecovery* on March 1st, 2023, available online:

<http://www.routledge.com/9781032158686>.”



It is deposited under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

Abstract:

In this chapter, the concept of quality of life (QOL) and its possible relationship to the recovery stress balance is discussed. More specifically, guided by a social-ecological perspective, attention is devoted to aspects of athletes' lives that have the potential to either enhance or diminish their ability to maintain an optimal balance. The literature is representative of studies that have examined the life experiences of athletes across various training and competition contexts and cultures. Emphasis is given to research involving interviews with a variety of athletes as well as the authors' applied experiences. Thus, the reader will encounter real-life scenarios and 'voices' of athletes who regularly experience the struggle of preserving their QOL in the midst of intense demands and maintaining an optimal recovery-stress balance.

Keywords: quality of life | QOL | recovery stress balance | athletes

Chapter:

Introduction

Athletes need to follow specialized training that provides proper recovery from intense strenuous mental and physical conditioning to achieve peak performance and compete at a high level (Kellmann, 2002). An imbalance between stress and recovery, referred to as underrecovery, may influence physiological, psychological, and behavioral responses that result in poor sport performance and burnout and even trigger mechanisms in developing or exacerbating mental health disorders (Brown et al., 2014; Gould & Dieffenbach, 2002). Athlete quality of life (QOL), influenced by physical, psychological, and sociocultural factors (Lundqvist, 2021), is one of the critical factors influencing athlete ability to maintain a recovery-stress balance (Martin et al., 2020). Using ecological (McLeroy et al., 1988) and biopsychosocial perspectives (Engel, 1977;

Zakrasjek et al., in press), this chapter discusses QOL and its relationship to athletes' recovery-stress balance by examining existing research evidence and athlete case examples. Additionally, implications and recommendations to improve athlete QOL and enhance the recovery-stress process are provided.

QOL is a broad, multidimensional concept used in various scientific disciplines (e.g., psychology, sociology, medicine). It consists of meanings and purposes typically associated with health, life satisfaction, and well-being attributed to personal and interpersonal factors, including relationships and culture (Lundqvist, 2021). For instance, the World Health Organization (WHO; 2012) defines QOL as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (para. 1). Health-related QOL (HRQOL), on the other hand, has been recently adopted in research and shown to predict health and well-being across populations, including athletes (Lundqvist, 2021; Parsons & Snyder, 2011). HRQOL is a multidimensional construct consisting of physical, psychological, and social functioning, which is influenced by individual beliefs and experiences in specific contexts (Guyatt et al., 1993). Thus, HRQOL can change over time based on an individual’s current situation, especially for those experiencing a health-related condition (Parson & Snyder, 2011).

For athletes, physical functioning could include factors such as strength, endurance, injuries, and illnesses; psychological functioning might be influenced by mood states, stress response, and mental health conditions; and social functioning can involve positive and negative social interactions with family, friends, coaches, and social media (Lundqvist, 2021). These QOL components could positively and negatively influence athletes' recovery-stress states, consisting of 19 general and sport-specific areas measured by the Recovery-Stress Questionnaire for Athletes (RESTQ-Sport, Kellmann & Kallus, 2001, 2016), especially during times of intense training (Kellmann, 2010). These areas could be broken down into (a) seven general stress states (General Stress, Emotional Stress, Social Stress, Conflicts/Pressure, Fatigue, Lack of Energy, and Physical Complaints), (b) five general recovery states (Success, Social Recovery, Physical Recovery, General Well-being, and Sleep Quality), (c) three sport-specific stress states (Disturbed Breaks, Emotional Exhaustion, and Injury), and (d) four sport-specific recovery states (Being in Shape, Personal Accomplishment, Self-Efficacy, and Self-Regulation).

1. Socio-ecological and biopsychosocial models

The social-ecological model for health promotion (McLeroy et al., 1988) and the biopsychosocial model (Engel, 1977) are empirically based frameworks that explain health-related outcomes, such as physical activity, sport injury prevention and recovery, and HRQOL (Martin et al., 2020; Zakrasjek et al., in press; Zhang & Solmon, 2013; Zhang et al., 2018). The social-ecological model considers factors across the interpersonal, organizational, community, and public policy levels in addition to the intrapersonal (i.e., individual) level (see Figure 6.1). A biopsychosocial perspective demonstrates how biological and physiological (e.g., immune functioning, muscular endurance and strength), psychological and emotional (e.g., personality, coping skills and strategies), and sociocultural (e.g., socioeconomic status, social network) factors interact with each other (see Figure 6.2), which researchers and practitioners often emphasize in the recovery-stress balance (Martin et al., 2020; Zakrasjek et al., in press). Therefore, these biopsychosocial factors enhance the application of the social-ecological model to predict and explain HRQOL.

The third level of the social-ecological model concerns organizational factors, referring to how organizational cultures and characteristics influence athlete QOL. For example, a culture supporting athletes' holistic development and QOL is necessary for coaches and athletes to value and prioritize recovery (e.g., Henriksen et al., 2020). The fourth level of the model—community—has three meanings: (1) primary groups, including friendship networks and neighborhoods to which individuals belong; (2) relationships among groups and organizations within a specific region, such as local health providers, schools, and sport clubs; and (3) geographical regions and political entities, including groups characterized by power structures (e.g., state associations religious organizations). A critical element of a community is the 'mediating structures', which are social sources that serve as connections between individuals and society and shape the larger identities, norms, values, and attitudes related to health and QOL (Berger & Neuhaus, 2021). As such, community support for QOL is imperative for endorsing the value of recovery in sport. The last level of the model is public policy, emphasizing population health over individual health. Policies that restrict unhealthy behaviors, promote healthy lifestyles through behavioral incentives, and allocate programmatic resources can facilitate athlete QOL and recovery (Milio, 1988). On the contrary, inadequate policies could cause adverse effects on QOL. Policies that address the physical, psychological, or social functioning of the general public, or specific athletic populations, can therefore influence athlete recovery, as well as resulting performance and well-being, directly by regulating population attitudes, norms, and behaviors and indirectly by changing individual perceptions of them.

The stress-injury model (Andersen & Williams, 1988), an example of a biopsychosocial model, illustrates the practical application of the aforementioned social-ecological levels in terms of how they interact with stress to influence HRQOL and injury. The model posits that athletes respond to stressful situations based on three key factors: their personality (intrapersonal level), history of stressors (intrapersonal level), and coping resources such as coping skills (intrapersonal level) and social support (interpersonal through public policy levels). Increased stress can lead to narrow attention, distractibility, and muscle tension that increase the possibility of injury. Athletes with high physical, psychological, and social functioning are more likely to have adaptive stress responses and less likely to suffer an injury, and recover more quickly if injured, compared to those with low functioning (Ford et al., 2000).

2. Research on athlete QOL and recovery

Although studies have yet to examine the connection between athlete QOL and recovery from an ecological perspective, this section connects the literature on athlete QOL to the corresponding levels of McLeroy et al.'s (1988) model through biopsychosocial factors. At the intrapersonal level, athletes' physical and psychological traits and states directly influence their QOL and recovery. Athletes who perceive better QOL tend to have greater physical capabilities and less injury occurrence (Calheiros et al., 2021; Lundqvist et al., in press). Regarding psychological factors, athletes' motivational profiles influence their well-being, including anxiety, burnout, coping, and recovery (Chu et al., 2018; Martinent & Decret, 2015). Specifically, athletes with higher intrinsic and self-determined motivation are more likely to experience better QOL and recovery. These findings suggest positive associations between individual experiences of QOL, primarily physical and psychological functioning, and the sport-specific recovery-stress balance (e.g., being in greater shape, more personal accomplishment, higher self-efficacy, fewer injuries, less emotional exhaustion).

At the interpersonal level, research has shown that athletes report higher levels of QOL and adaptive outcomes related to injury recovery when receiving support for basic psychological needs—autonomy (i.e., a sense of volition), competence (i.e., a sense of effectiveness), and relatedness (i.e., a sense of connection; Deci & Ryan, 1985)—from significant others, teammates, or coaches (Carson & Polman, 2017; Watkins et al., 2020). Wadey et al. (2016) found that competence and relatedness had direct and indirect effects on positive affect through perceived stress-related growth in previously injured athletes. Thus, need-supportive training and rehabilitation environments, created by the coaching and medical staff, are crucial for athlete recovery. In contrast, losing social support or close relationships with significant others is related to low QOL reported by athletes (Lundqvist et al., in press).

At the organizational and community levels, the promotion of mental health awareness and availability of support systems are facilitative of QOL (Lundqvist, 2021; Schary & Lundqvist, 2021), especially for vulnerable athletes, including those who are young, injured, distressed, or disabled (Calheiros et al., 2021; Parsons & Snyder, 2011). For youth athletes, beyond physical, psychological, and social functioning, HRQOL can also include school functioning influenced by organizational factors. For example, academic accommodation policies help youth athletes who suffer concussions maintain school functioning by reducing their anxiety about falling behind (Iadevaia et al., 2015). On the contrary, injured athletes who perceive limited social support and healthcare services may have lower confidence and commitment in rehabilitation, resulting in worse functioning in the recovery process (Watkins et al., 2020). Moreover, collegiate athletes who experienced amplified struggles and lowered social functioning amid the COVID-19 pandemic were likely exposed to deficient support systems that delayed their recovery from sport and life stressors (Schary & Lundqvist, 2021).

Organizational and community factors influence QOL and recovery also in athletes with disabilities. Wheelchair handball athletes with better mobility resources, higher physical independence, and more training sessions were shown to have higher perceived QOL (Calheiros et al., 2021). Investigating HRQOL and sport experiences in youths with physical disabilities (e.g., cerebral palsy, spina bifida), Shapiro and Malone (2016) found that their physical functioning was related to better well-being, psychological functioning to better well-being and less fatigue, and school functioning with less psychological distress in sport in addition to better well-being and less fatigue. Thus, programs that provide organizational or community QOL support to athletes, especially those with physical injuries and disabilities, could influence their general and sport-specific recovery-stress balances.

Public policies influence sport participation in several ways. Proactive policies do not only enhance early access to athletic programs but also encourage individuals to maintain sport and physical activity participation throughout their lifespan (Eime et al., 2016). Policies may also promote positive athletic transferable skills (e.g., goal setting) to facilitate a recovery-stress balance in other areas of life (Sebri et al., 2020). Coordinated efforts between public policy and other levels (e.g., community) can have various informal and formal impacts on sports (e.g., promoting equity and inclusion) through shared information and resources. Interprofessional or multidisciplinary teams must work together to develop level-specific and overarching strategies to maximize athlete QOL and recovery (U.S. Department of Health and Human Services, 2019). The health profession, specifically, has a crucial role in facilitating policy development, analysis, advocacy, and implementation (Schwartz et al., 1995).

3. Diverse athlete voices from interviews and real-life causes

Based on the literature reviewed in the last section, this section uses athlete voices from previous qualitative research and the authors' consulting cases to demonstrate the manifestation of the QOL–recovery connection

3.1 Elite athletes

Qualitative interviews with top-level athletes in Sweden demonstrated four major themes of their perceived QOL (Lundqvist et al., in press). The first theme was an 'inner striving', referring to athletes' trust and belief in their physical capacity. For instance, one athlete experienced QOL when being "in the best physical shape ever and I knew I had done everything I had been able to do to get to where I was that day." Lundqvist et al. (in press) attributed this inner striving to factors across intrapersonal, interpersonal, and organizational levels in athletes' social-ecological systems, such as their high psychological need satisfaction and intrinsic motivation coupled with high task and ego orientation (i.e., the 'fire'; Mallett & Hanrahan, 2004), perceived high mastery (e.g., cooperation) and performance (e.g., competitive behaviors) climates shaped by coaches and peers, and a culture of striving in athletes' sport and non-sport (e.g., family) networks, respectively. The second theme was gratitude for the opportunity and the self-determination to invest in value-driven behaviors. For example, the athletes discussed their experiences and desires to "get the opportunity to train as much as I want and have nothing else I must do" and "become a better athlete so most of what I do is about performing or to make moves towards this goal." Autonomy and competence seem particularly important for their QOL relevant to physical and psychological functioning. These first two QOL themes could be deemed conducive to athletes' sport-specific recovery in terms of being in shape, personal accomplishment, self-efficacy, and self-regulation.

The third QOL theme centered on negative (i.e., stressors) and positive (i.e., goals) prerequisites for sport investment. The athletes stated the everyday stressors for sport investment, consistent with the HRQOL components, as physical (physiological), psychological, and social. Typical physical and psychological stressors are demands of the sport and illnesses and injuries. One athlete said, "The need to change my diet all the time. It's really stressful. I get hormonal disorders. To know that you do not have control of your body, it gets into my head a lot." Social stressors involve balancing between life in and outside of sport. For instance, several athletes stated their choice to not maintain relationships for the benefit of the sport performance, "I broke up with my boyfriend this summer. I chose not to have it because it was too much... I realize that I do the thing I really want to do. That is, put all my effort into my sport." These negative QOL experiences could diminish athletes' ability to maintain a recovery-stress balance due to the heightened stress states, consisting of social stress, conflicts/pressure, fatigue, lack of energy, and physical complaints in general as well as emotional exhaustion and injury in sport.

In contrast, the athletes expressed the positive prerequisites of sport investment as setting and reaching an overarching goal. One athlete explained, "I can feel harmony when me and my coach have sat down and made the plan for the year. I know what my goals are and I will start working on them." These experiences of achieving goals, however, could also lead to negative QOL experiences. One athlete mentioned, "Somehow it can be hard when you have achieved a challenging goal. I managed to win gold in the European Championships and afterward I remembered it was like... But now what?" Lundqvist et al.'s (in press) discerned whether the goal achievement contributed to a positive or negative QOL experience was relevant to the goal process,

driven by task orientation (self-referenced criteria) or ego orientation (other-referenced criteria), respectively. For example, one athlete stated, “I will not succeed at the first try and maybe not the second one, but I get better and better every time. I feel that, wow, now things start to happen. I can master this and I start to understand. It’s quality of life for me and it’s really fun.” Thus, task orientation, rather than ego orientation, in the pursuit of goals likely contributes to positive QOL and sport-specific recovery in the areas of personal accomplishment and self-efficacy.

The fourth QOL theme concerned emotional states, which encompassed both durable and momentary emotions experienced by the athletes. Durable states involve general mental well being and feelings of enjoyment, happiness, harmony, and balance. One athlete mentioned, “You may not reflect on how good everything is... you don’t have to make an effort but it all goes automatically... you find a balance.” On the other hand, reoccurring momentary emotional states, such as flow and excitement, typically relate to the experience of having pushed the body and the mind to the limit. One athlete expressed, “To push the body and try to challenge yourself, both muscularly and physically as well as mentally. See how much you can push yourself and try to chase the feeling of rush.” Several athletes, however, stressed that this ‘rush’ requires sufficient rest following a practice or competition. These positive emotional states that contribute to QOL, coupled with adequate rest, can improve recovery through the states of general well-being, success, and physical recovery, as well as a sport-specific recovery-stress balance with undisturbed breaks, personal accomplishment, and self-regulation.

Case example. The following case illustrates the relationship between QOL, satisfaction of basic psychological needs (e.g., competence), and emotional states of Isabella, an international student-athlete and a top player on her NCAA Division I women’s golf team. Isabella sought help when feeling generally unhappy with her collegiate golf experience and stressed about her inability to perform to her lofty expectations. She elaborated that she felt miserable and anxious most of the time while practicing and competing, especially when she was not playing well. The sport psychology consultant applied a self-motivation strategy to help Isabella set goals and identify how she wanted to feel (e.g., joy, achievement, satisfaction) rather than how she did not (e.g., worthlessness, disappointment, helplessness). The consultant also implemented a self-compassion intervention to encourage Isabella to reframe her dissatisfaction with her performance into fierce competitiveness (e.g., having clarity, using wisdom, being constructive). Despite these efforts, Isabella continued to experience high levels of performance frustration and maintained her unrealistically high expectations of herself on the course. Isabella’s self-imposed pressure and inability to feel competent took quite a toll on her QOL, most notably her psychological functioning (e.g., unhappiness, decreased life satisfaction, lower motivation).

Complicating matters, Isabella’s need for belongingness was thwarted by the lack of a trusting relationship with her coach and by unsupportive teammates who stigmatized her for seeking help. She further admitted that being a long way from home and her support system (e.g., family, close friends), which caused lower social functioning, intensified her unhappiness and decreased motivation for golf. With support from the consultant, Isabella approached her coach about skipping an upcoming tournament, allowing her to take a step back and reset for the conference championships in a few weeks. As a result of doing so, Isabella reported feeling more energized and excited to play golf and thus restored her psychological functioning. The consultant helped her set challenging yet more realistic expectations for the conference tournament, and together they identified keys to playing well that were under her control. During the conference championships, she performed to her new expectations and helped her team to a third-place finish. Afterward, she expressed a sense of relief and indicated she was looking forward to working on

her game over the summer and returning in the fall for her senior season. Improvements in Isabella's performance frustrations and motivation for golf were linked directly to changes in the intrapersonal (e.g., feelings of competence), interpersonal (e.g., consultant support), and organizational (e.g., skipping tournament) influences on her QOL and recovery.

3.2 Injured Athletes

Injuries tend to negatively impact athlete QOL and ability to maintain a recovery-stress balance due to the added physical and psychosocial stress in both general and sport-specific domains (Watkins et al., 2020). This impact may extend beyond the individual athlete to the team, worsening mental states and performances caused by the fear of injury and lack of confidence (Hurley, 2016).

Watkins et al. (2020) interviewed 13 adult athletes following a sport-related knee injury (e.g., ACL rupture, MCL tear) to explore their attitudes toward self-managing knee health, resulting in four key themes. The first theme was mixed experiences and perceptions of current care provision that affected their physical and psychological functioning. On the one hand, the athletes noted that "everybody seems to have been treated differently," showing their frustration and ambiguity in the diagnosis and treatment. On the other hand, the athletes enjoyed group rehabilitation that facilitates social functioning and recovery, reporting that they "really quite liked that setup and being part of a group" and that it was "nice to be surrounded by people going through the same thing."

The second theme was the negative long-term impacts of knee injury. The athletes unanimously discussed, "I am always going to be wary now" and "it was a whole lifestyle overhaul for me," as they acknowledged the broader implications of reinjury or degenerative knee health. Some athletes specifically mentioned a loss of independence and athletic identity that reduced their QOL, "I suffered with a few mental health concerns, because it was that dedication, and that dedicating to sport that obviously being told you can't do it anymore." The negative impacts of injury presented in the first two themes are related to frustration of autonomy, competence, and relatedness, which impedes physical and social recovery (Watkins et al., 2020).

The third theme centered on athlete motivation to conserve health by thinking, "Do what you can, while you can." The athletes believed that being physically active and building strong muscles under their control could preserve their knee health and psychological well-being to return to their sport. One athlete stated, "If I keep training and keep myself nice and loose, stay active and then hopefully I can stay on my feet a lot longer than people do nowadays." Another athlete said, "My main motivation has been getting back to playing again." These positive beliefs and motives help athletes feel autonomous and competent in the recovery process.

The fourth theme, opportunities for supplementary support, is concerned with support across interpersonal, organizational, and community levels. The athletes recognized that they were not alone; their teammates and people they met through social media also had knee problems. One athlete said, "I was very fortunate—there was another girl who had the same thing done. So we were the same, and I guess being around other people in the gym, they could tell you a bit more about what to do." Another athlete discussed, "I did find a really useful group on Instagram called #ACLclub—it really helped me because it made me realize that I wasn't the only one having problems or having the same frustrations." The athletes further mentioned that access to electronic resources, such as smartphone applications, provided helpful information to monitor, manage, and treat knee symptoms, "If you were still getting trouble, like pains in your knee ... it would have a

set of questions, then it could be a diagnosis kind of thing.” The third and fourth themes both highlighted intrapersonal and interpersonal factors that could help injured athletes, through satisfaction of basic psychological needs, experience better physical, psychological, and social functioning that promote recovery (Watkins et al., 2020).

Case example. The following case of an NCAA Division I pole vaulter, David, illustrates the connection between QOL and recovery in injured athletes. David self-referred to sport psychology services after having suffered a knee injury from a patellar tendon tear and completed surgery, which prevented him from competing for a year and a half. At the start of the consultation, his presenting concerns included worrying about his recovery from injury and experiencing self-doubt and performance anxiety, which was partially related to his generalized anxiety disorder diagnosis. David reported being passionate about pole vaulting but feeling disappointed and anxious when comparing himself to other pole vaulters who improved more quickly than he did. David stated that his family and teammates were supportive but that his coach was ‘negative’ and not understanding of his recovery process at times (e.g., asking him to practice while in pain). The combination of intrapersonal (e.g., ego orientation) and interpersonal (e.g., psychological need thwarting from the coach) factors, in and out of his sport environments, produced a complex dynamic that led to an overall decline in his QOL during the injury recovery process. Fortunately, David had personal (e.g., intrinsic motivation) and social resources (e.g., family support) that protected him from burnout and encouraged him to seek help.

The sport psychology consultant engaged in weekly consultations with David over four months. After identifying his self-doubt and social comparisons with others, the consultant taught David ways to adopt a growth mindset (i.e., task orientation) and engaged in mindfulness practices. David reported, as a result, he felt more focused and less worried about his injury and performance. The consultant then introduced him to mental imagery to manage anxiety and gain confidence. Provided with a weekly schedule and daily exercises, David followed the personalized intervention plan to journal his body sensations, thoughts, and emotions immediately after each practice and to implement daily positive self-affirmations. Additionally, the consultant implemented an interpersonal intervention, guiding David to communicate honestly, assertively, and respectfully with his coach about his occasionally intense knee pain that requires lightening the training intensity or even taking a day off. Over the course of the consultation, David had gained psychological skills to cope with personal and interpersonal stressors and experience better QOL that facilitated his recovery process and subsequent peak performance in the next season.

3.3 Youth athletes

Youth athletes may have similar QOL and recovery-stress experiences as adult athletes. However, family and school involvements in youths’ lives generate additional interpersonal, organizational, and community factors that affect their QOL (Patel & Jayanthi, 2018). Patel and Jayanthi (2018) qualitatively examined parent and child perceptions of QOL and sport specialization in the U.S. Beyond the generally positive perceptions of health benefits, social community, and life lessons from sport participation, the researchers found four characteristics of youth athletes and parent–child interactions (or lack thereof) that distinguished athlete levels of QOL: (a) genuine interest in the sport, (b) supportive relationships, (c) low anxiety in sport participation, and (d) resilience when facing losses. Most youth athletes in the study stated that playing sports was fun and allowed them to receive social support from friends and family, “You can have a lot of friends there and

the more friends you make the better” and “everyone that I know plays tennis. I’ve got good support for it.”

The parents in the study emphasized the importance of role modeling and a positive community in sport, such as the “social circle with the guys and the coaches. Being in a household without a father, [football] pretty much... [gave] him that mentor circle” and “learn the courtesy of golf and the good behavior of golf.” However, some parents realized that their child athletes’ social networks were relatively limited to sport. One mother mentioned that her daughter “doesn’t have a lot of time outside of the gym [for] normal teenager stuff.” Thus, characteristics that contribute to QOL and athlete ability to recover, socially and psychologically, stem from factors across levels of the social-ecological and biopsychosocial models. More specifically, both personal and environmental characteristics (e.g., need support or thwarting in the community and from social agents) influence satisfaction or frustration of athletes’ basic psychological needs and recovery (Chu & Zhang, 2019).

Case example. The following case of a youth athlete, RayRae, illustrates the biopsychosocial and sociocultural factors in the QOL–recovery connection. Since kindergarten, RayRae recognized that she was much taller and had darker skin than most of her peers. Despite her lack of interest in the sport, she was expected to be a great basketball player throughout elementary school because of her height and family members’ past success in basketball. People often stared at her, causing her to feel out of place at school and around town. Following the recommendation of her aunt, RayRae approached a local volleyball club despite not being very coordinated or as skilled in volleyball as the others on the team. The team regularly traveled to out-of-state competitions and competed successfully in high-level tournaments, such as the junior national championship. When RayRae had an opportunity to play, she was often frustrated by comments made about her, such as being a “baby giraffe” or a “deer in headlights.” Although she enjoyed her team, she often was upset about her limited playing time and opportunities for skill development. These negative influences across intrapersonal, interpersonal, organizational, and community levels led to her low QOL and heightened stress.

At her mother’s behest, RayRae met with a sport psychology consultant for support in her psychosocial functioning and recovery. The consultant, with the support of the club owners and coaches, also worked with the parents and athletes on the team through interactive group activities. The consultant highlighted the importance of improving the team environment by respecting individual differences (e.g., physical appearance) and celebrating small successes, which could lead to greater motivation and a sense of belonging for all. The consultant’s work and organizational support resulted in improved comments and behaviors of parents and athletes, enhanced athlete QOL and recovery, and better team and individual (including RayRae’s) performance. RayRae’s improved functioning showcased the importance of organizational and multidisciplinary support for healthy team environments and individual athlete development.

4. Implications and recommendations

This chapter focuses on the social-ecological and biopsychosocial models, coupled with existing research and athlete voices, that explain athlete QOL and recovery. Three core messages resonate from this chapter which are as follows:

1. The evidence base regarding the overall well-being and recovery in athletes is limited. This chapter opens up new avenues of insight regarding the reciprocal relationship between QOL, recovery and stress.
2. A range of factors, relating to individual and contextual aspects, need to be considered in order to sustainably enhance QOL and improve recovery-stress balance.
3. Recognition of an athlete's QOL is not simply an issue for sport psychology professionals and their clients. A shared mandate within community and organizational systems is necessary for both the promotion of well-being and sport performance.

From an ecological perspective, QOL interventions at the intrapersonal level could apply behavioral change theories that target individual characteristics and habits (McLeroy et al., 1988), including knowledge, attitudes, skills, and intentions to engage in stress reduction and recovery behaviors. Athletes can be taught to apply mental strategies such as mindfulness techniques to reduce stress and injury risks. Interventions at the interpersonal level should be designed to modify social influences, such as the social environments created by coaches, athletic staff, peers, and family to support athletes. Social agents, for example, could focus on athletes' effort and improvement and offer them unconditional positive regard and recovery resources (Chu & Zhang, 2019).

QOL interventions at the organizational level must address changes in the organizational culture for program adoption, implementation, and institutionalization (McLeroy et al., 1988). For instance, sport organizations must provide access to mental health services and well-being resources. All athletic support staff should be educated on common psychological reactions to stress, encourage athlete help-seeking behaviors, and act as a resource of general support (Schary & Lundqvist, 2021). In addition to using the RESTQ-Sport to monitor athlete recovery-stress states (Kellmann & Kallus, 2001, 2016), sport medicine staff or coaches might routinely examine athlete QOL using measurement tools, such as the 36-item Short Form Health Survey (SF-36; Ware et al., 2007), especially for injured or distressed athletes (Parsons & Snyder, 2011). These organizational interventions could become part of the community interventions when the organizational programming has been institutionalized and normalized (McLeroy et al., 1988). A community focus for athlete QOL may therefore include coalition building among sport organizations and community agencies to promote awareness and a subculture of prioritizing recovery. The NFL Total Wellness Initiative is an example that aims to "build systems, create programs, provide resources, and encourage culture change to enhance the overall well-being of the NFL community in the areas of physical, emotional, spiritual, social, and financial health" (National Football League, n.d.). In youth sport, community interventions can involve proactive communication among schools or school districts on adequate policies (e.g., academic accommodation) that help youths recover from competitions or injuries (Iadevaia et al., 2015).

Lastly, interventions at the public policy level can facilitate collaboration among sport psychology professionals, medical professionals, and sport administrators to analyze, develop, and advocate for policies that support athlete QOL for a recovery-stress balance. Examples in the United States include (1) the mandatory SafeSport training for athletic staff to foster prevention, education, and accountability for physical and emotional abuse, (2) the NBA's recent regulation requiring at least one full-time licensed mental health professional on staff to provide well-being programming, and (3) the NCAA's 20-hour maximum athletic activities rule to prevent

overtraining. Public policies promoting athlete QOL would also produce a spillover effect to benefit interventions at other levels.

To address all the factors involved in the QOL–recovery connection (see Figure 6.2), using an interprofessional care team (iTeam; see Martin et al., 2020) is needed. The iTeam ought to represent a cooperative group of professionals that trust one another enough to integrate their personal and professional competencies to best support athletes (Zakrajsek et al., in press). Members of the iTeam could include coaches, physicians, orthopedic specialists (e.g., athletic trainers, physical therapists), nutritionists and dietitians, mental health specialists (e.g., clinical psychologists), mental performance consultants, and other professionals. Effective communication among iTeam members help gain a holistic view of the biopsychosocial factors that put athletes at risk for greater stress, underrecovery, and possibly injury. Athletes and coaches should be fully aware of iTeam members’ various roles and responsibilities, which may require regular evaluation of athletes and frequent interaction among iTeam members. An additional benefit of this approach is to enhance openness to mental skills training, decrease perceived barriers (e.g., stigma) to service use, and promote positive expectations for sport psychology consulting, which could increase intentions to use and the actual use of services (Martin et al., 2012; Zakrajsek et al., 2011). The use of services may then affect individuals and groups at various levels (team, league, school, governing body, sport culture, and global community) to further prioritize athlete QOL and a recovery-stress balance. Finally, evaluating the effectiveness of an interprofessional or multidisciplinary team approach may lead to improved team and organizational policies and procedures, which help intervene at all levels of the social-ecological and biopsychosocial models.

References

- Andersen M. B., Williams J. M. (1988). A model of stress and athletic injury: Prediction and prevention. *Journal of Sport and Exercise Psychology*, 10(3), 294–306.
<https://doi.org/10.1123/jsep.10.3.294>
- Berger, P. L., & Neuhaus, R. J. (2021). To empower people: The role of mediating structures in public policy. In J. S. Ott & L. A. Dicke (Eds.), *The nature of the nonprofit sector* (4th ed., pp. 350–361). Routledge.
- Brown, G. T., Hainline, B., Kroshus, E., & Wilfert, M. (2014). *Mind, body and sport: Understanding and supporting student-athlete mental wellness*. National Collegiate Athletic Association. Retrieved January 16, 2022, from
<https://www.ncaapublications.com/productdownloads/MindBodySport.pdf>
- Calheiros, D. D. S., Neto, J. L. C., Melo, F. A. P., Pedrosa de Melo, F. Í., & Munster, M. A. V. (2021). Quality of life and associated factors among male wheelchair handball athletes. *Perceptual and Motor Skills*, 128(4), 1623–1639.
<https://doi.org/10.1177/00315125211014865>
- Carson, F., & Polman, R. C. J. (2017). Self-determined motivation in rehabilitating professional rugby union players. *BMC Sports Science, Medicine and Rehabilitation*, 9(2), 1–11.
<https://doi.org/10.1186/s13102-016-0065-6>
- Chu, T. L., & Zhang, T. (2019). The roles of coaches, peers, and parents in athletes’ basic psychological needs: A mixed-studies review. *International Journal of Sports Science & Coaching*, 14(4), 569–588. <https://doi.org/10.1177/1747954119858458>

- Chu, T. L., Zhang, T., & Hung, T. M. (2018). Motivational profiles in table tennis players: Relations with performance anxiety and subjective vitality. *Journal of Sports Sciences*, 36(23), 2738–2750. <https://doi.org/10.1080/02640414.2018.1488517>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.
- Eime, R. M., Harvey, J. T., Charity, M. J., & Payne, W. R. (2016). Population levels of sport participation: Implications for sport policies. *BMC Public Health*, 16, 752. <https://doi.org/10.1186/s12889-016-3463-5>
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129–136. <https://doi.org/10.1126/science.847460>
- Filbay, S., Pandya, T., Thomas, B., McKay, C., Adams, J., & Arden, N. (2019). Quality of life and life satisfaction in former athletes: A systematic review and meta-analysis. *Sports Medicine*, 49(11), 1723–1738. <https://doi.org/10.1007/s40279-019-01163-0>
- Ford I. W., Eklund R. C., & Gordon S. (2000). An examination of psychosocial variables moderating the relationship between life stress and injury time-loss among athletes of a high standard. *Journal of Sports Sciences*, 18(5), 301–312. <https://doi.org/10.1080/026404100402368>
- Gould. D., & Dieffenbach. K. (2002). Overtraining, underrecovery, and burnout in sport. In M. Kellmann (Ed.), *Enhancing recovery: Preventing underperformance in athletes* (pp. 25-35). Human Kinetics.
- Guyatt, G. H., Feeny, D. H., & Patrick, D. L. (1993). Measuring health-related quality of life. *Annals of Internal Medicine*, 118(8), 622–629. <https://doi.org/10.7326/0003-4819-118-8-199304150-00009>
- Houston, M. N., Hoch, M. C., & Hoch, J. M. (2016). Health-related quality of life in athletes: A systematic review with meta-analysis. *Journal of Athletic Training*, 51(6), 442–453. <https://doi.org/10.4085/1062-6050-51.7.03>
- Hurley, O. A. (2016). Impact of player injuries on teams' mental states, and subsequent performances, at the Rugby World Cup 2015. *Frontiers in Psychology*, 807. <https://doi.org/10.3389/fpsyg.2016.00807>
- Iadevaia, C., Roiger, T., & Zwart, M. B. (2015). Qualitative examination of adolescent health related quality of life at 1 year postconcussion. *Journal of Athletic Training*, 50(11), 1182–1189. <https://doi.org/10.4085/1062-6050-50.11.02>
- Kellmann, M. (Ed.). (2002). *Enhancing recovery: Preventing underperformance in athletes*. Human Kinetics.
- Kellmann, M. (2010). Preventing overtraining in athletes in high-intensity sports and stress/recovery monitoring. *Scandinavian Journal of Medicine & Science in Sports*, 20(Suppl. 2), 95–102. <https://doi.org/10.1111/j.1600-0838.2010.01192.x>
- Kellmann, M., & Kallus, K. W. (2001). *The Recovery–Stress Questionnaire for Athletes: User manual*. Human Kinetics.

- Kellmann, M., & Kallus, K. W. (2016). Recovery-Stress Questionnaire for Athletes. In K. W. Kallus & M. Kellmann (Eds.), *The Recovery-Stress Questionnaires: User manual* (pp. 86-131). Pearson Assessment & Information GmbH.
- Lundqvist, C. (2021). Well-being and quality of life. In R. Arnold & D. Fletcher (Eds.), *Stress, well-being and performance in sport* (pp. 131–147). Routledge.
- Lundqvist, C., Träff, M., & Brady, A. (in press). “Not everyone gets the opportunity to experience this”: Swedish elite athletes’ perceptions of quality of life. *International Journal of Sport Psychology*.
- Mallett, C. J., & Hanrahan, S. J. (2004). Elite athletes: Why does the “fire” burn so brightly? *Psychology of Sport and Exercise*, 5(2), 183–200.
[https://doi.org/10.1016/S14690292\(02\)00043-2](https://doi.org/10.1016/S14690292(02)00043-2)
- Martin, S. B., Zakrajsek, R. A., Casey, T., & Bianco, A. G. (2020). Mental techniques for performance. (Independent Course, ISC 30.3.4). In C. Hughes (Ed.), *Special topics: Enhancing performance using a mind, body, metric approach* (pp.125-168). Academy of Orthopaedic Physical Therapy, American Physical Therapy Association.
- Martin, S. B., Zakrajsek, R. A., & Wrisberg, C. A. (2012). Attitudes toward sport psychology and seeking assistance: Key factors and a proposed model. In C. D. Logan & M. I. Hodges (Eds.), *Psychology of attitudes* (pp. 1–33). Nova Science.
- Martinet, G., & Decret, J. C. (2015). Motivational profiles among young table-tennis players in intensive training settings: A latent profile transition analysis. *Journal of Applied Sport Psychology*, 27(3), 268–287. <https://doi.org/10.1080/10413200.2014.993485>
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15(4), 351–377.
<https://doi.org/10.1177/109019818801500401>
- Milio, N. (1988). Strategies for health-promoting policy: A study of four national case studies. *Health Promotion*, 3(3), 307–311. <http://www.jstor.org/stable/45153942>
- National Football League. (n.d.). NFL total wellness. <https://operations.nfl.com/inside-football-ops/players-legends/nfl-total-wellness/>
- Parsons, J. T., & Snyder, A. R. (2011). Health-related quality of life as a primary clinical outcome in sport rehabilitation. *Journal of Sport Rehabilitation*, 20(1), 17–36.
<https://doi.org/10.1123/jsr.20.1.17>
- Patel, T., & Jayanthi, N. (2018). Health-related quality of life of specialized versus multi-sport young athletes: A qualitative evaluation. *Journal of Clinical Sport Psychology*, 12(3), 448–466. <https://doi.org/10.1123/jcsp.2017-0031>
- Petterson, H., & Olson, B. L. (2017). Effects of mindfulness-based interventions in high school and college athletes for reducing stress and injury, and improving quality of life. *Journal of Sport Rehabilitation*, 26(6), 578–587. <https://doi.org/10.1123/jsr.2016-0047>
- Prochaska, J. O., Norcross, J. C., & DiClemente, C. C. (1994). *Changing for good: A revolutionary six-stage program for overcoming bad habits and moving your live positively forward*. HarperCollins Publishers.

- Schwartz, R., Goodman, R., & Steckler, A. (1995). Policy advocacy interventions for health promotion and education: Advancing the state of practice. *Health Education Quarterly*, 22(4), 421–426. <https://doi.org/10.1177/109019819502200401>
- Sebri, V., Savioni, L., Triberti, S., Durosini, I., Mazzocco, K., & Pravettoni, G. (2020). Do you transfer your skills? From sports to health management in cancer patients. *Frontiers in Psychology*, 11, 546. <https://doi.org/10.3389/fpsyg.2020.00546>
- Shapiro, D. R., & Malone, L. A. (2016). Quality of life and psychological affect related to sport participation in children and youth athletes with physical disabilities: A parent and athlete perspective. *Disability and Health Journal*, 9(3), 385–391. <https://doi.org/10.1016/j.dhjo.2015.11.007>
- U.S. Department of Health and Human Services. (2019). National youth sports strategy. Retrieved January 16, 2022, from https://health.gov/sites/default/files/2019-10/National_Youth_Sports_Strategy.pdf
- Wadey, R., Podlog, L., Galli, N., & Mellalieu, S. D. (2016). Stress-related growth following sport injury: Examining the applicability of the organismic valuing theory. *Scandinavian Journal of Medicine & Science in Sports*, 26(10), 1132–1139. <https://doi.org/10.1111/sms.12579>
- Ware, J. E., Kosinski, M., Bjorner, J. B., Turner-Bowker, D. M., Gandek, B., & Maruish, M. E. (2007). User's manual for the SF-36v2 Health Survey (2nd ed.). QualityMetric Inc.
- Watkins, R., Young, G., Western, M., Stokes, K., & McKay, C. (2020). Nobody says to you “come back in six months and we’ll see how you’re doing”: A qualitative interview study exploring young adults’ experiences of sport-related knee injury. *BMC Musculoskeletal Disorders*, 21, 419. <https://doi.org/10.1186/s12891-020-03428-6>
- World Health Organization. (2010). Framework for action on interprofessional education & collaborative practice. Retrieved January 16, 2022, from https://www.who.int/hrh/resources/framework_action/en/
- World Health Organization (2012, March 1). The World Health Organization Quality of Life (WHOQOL). Retrieved January 16, 2022, from <https://www.who.int/toolkits/whoqol>
- Zakrajsek, R. A., Bianco, A., Casey, T., & Hayden, K., & Martin, S. B. (in press). Mental techniques for injury prevention and rehabilitation. In I. Nixdorf, J. Beckmann, T. MacIntyre, S. B. Martin, & R. Nixdorf (Eds.), *Routledge handbook of mental health in elite sport*. Routledge.
- Zakrajsek, R. A., Martin, S. B., & Zizzi, S. J. (2011). American high school football coaches’ attitudes toward sport psychology consultation and intentions to use sport psychology services. *International Journal of Sports Science & Coaching*, 6(3), 461–478. <https://doi.org/10.1260/2F1747-9541.6.3.461>
- Zhang, T., Dunn, J., Morrow, J., & Greenleaf, C. (2018). Ecological analysis of college women’s physical activity and health-related quality of life. *Women & Health*, 58(3), 260–277. <https://doi.org/10.1080/03630242.2017.1296057>
- Zhang, T., & Solmon, M. (2013). Integrating self-determination theory with the social ecological model to understand students’ physical activity behaviors. *International Review of Sport and Exercise Psychology*, 6(1), 54–76. <https://doi.org/10.1080/1750984x.2012.723727>