



# Optimising motivation and reducing burnout for radiation oncology trainees: A framework using self-determination theory

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## Introduction

High levels of emotional exhaustion and/or depersonalisation have been reported in 49.5% of radiation oncology trainees in Australia and New Zealand.<sup>1</sup> These are the core components of burnout, a work-related state of chronic exhaustion, where individuals experience physical, cognitive and emotional fatigue (Table 1). Exhaustion may be paired with distancing from patients and colleagues, irritability and cynicism about the value of one's work. Depersonalisation may initially be used as an adaptive mechanism to cope with work demands but becomes dysfunctional when negative or inappropriate attitudes towards others become pervasive and interfere with effective service delivery. A third component of burnout, not always regarded as a core dimension,<sup>2</sup> occurs when an individual has feelings of low professional efficacy and doubts about his/her capacity to perform work-related tasks and meet job demands.<sup>3</sup>

Although high rates of burnout are described for radiation oncology trainees, caution must be exercised when interpreting burnout prevalence data. There is debate regarding the clinical validity of cut-off points for grading the severity of this condition using the normatively

## Summary

Radiation oncology trainees in Australia and New Zealand have relatively high levels of emotional exhaustion and depersonalisation which are core components of burnout. The stresses of a demanding clinical load, studying for exams as well as family commitments are all contributing factors. Self-Determination Theory (SDT) provides a framework for optimising motivation which may be intrinsic or extrinsic. The three core components of SDT are competence, relatedness and autonomy. These factors should be addressed at a college level, Institutional and a personal level if the best outcomes are to be achieved. An environment that supports the individual's experience of competence, relatedness and autonomy will foster motivation and work engagement which in turn will improve performance, energy, resilience and creativity and reduce levels of burnout.

**Key words:** burnout; motivation; radiation oncology; trainees.

referenced Maslach Burnout Inventory-Human Services Survey.<sup>4</sup> The MBI-HSS tool was developed for research rather than clinical use and critical thresholds for high burnout are not well established.<sup>5</sup> Despite this caveat, the limited evidence to date suggests that Australian and New Zealand radiation oncology trainees are at risk of burnout.<sup>1</sup> Therefore, understanding and describing strategies with potential to prevent burnout and optimise motivation are essential when considering the health, well-being, retention and productivity of radiation oncology trainees.

Like most specialists in training, radiation oncology trainees face on-going challenges associated with the everyday reality of having heavy and demanding clinical workloads. The potentially adverse effects of chronic work overload on employee health are well documented.<sup>6</sup> These include psychological and physical health problems, including anxiety, depression, sleep disturbance, memory impairment and neck pain,<sup>7</sup> alcohol dependence and cardiovascular disease.<sup>8</sup> In addition to experiencing clinical workload strains, radiation oncology trainees have sustained periods of stress and pressure as they prepare for specialists' exams. Many are also juggling the competing demands of having young

**Table 1.** Components of burnout

Exhaustion	Mental, physical and cognitive exhaustion that occurs when the demands of work exceed the amount of energy that is available. <i>Emotional exhaustion</i> is the feeling of being 'used up' and unable to face another day. <i>Physically</i> , the individual may find it hard to get up each day to face another day's work
Depersonalisation	That feeling may prompt individuals to emotionally and cognitively distance themselves from their work as one coping mechanism. <i>Depersonalisation</i> is characterised by a negative shift in responses to others. In other words, one may start to treat patients as a 'case' or a 'number', distancing oneself from that person and others in one's environment, including colleagues. There is an affective-symptomatic lack of empathy or feelings of being connected to others
Reduced sense of personal accomplishment	<i>Reduced sense of personal accomplishment</i> is characterised by a negative shift in response towards oneself and the work that one does because of seemingly insurmountable pressures on the job. Reduced personal accomplishment, or a sense of reduced professional efficacy, may contribute to an overall sense of ineffectiveness

families and relationships. Workplace interpersonal demands and administrative/organisational issues represent extra pressures reported by radiation oncology trainees.<sup>1</sup>

It is important to identify the factors that can help trainees cope with the high pace of work, study and other competing life demands. Building resilience in radiation oncology trainees to cope with on-going stresses throughout the long training programme also has potential benefits to build a stronger workforce and enhance the well-being and motivation of radiation oncologists throughout their careers. The impact of burnout on radiation oncology trainees can include low morale, poor patient care, increased sick leave, medical errors and an increased likelihood of leaving the training programme. In a study of radiographers, intention to leave rose when motivation was low and burnout was high and it is reasonable to assume a similar trend would be apparent for radiation oncology trainees.<sup>9</sup>

A baseline prerequisite for developing guidelines to optimise motivation and prevent burnout for this target group is to fully understand the personal-contextual factors associated with burnout and its positive motivational opposites, work engagement and job satisfaction. This information can inform the development of preventive and intervention approaches to help prospective radiation oncologists not only survive, but thrive during the training programme. This will also provide a rigorous foundation for future policy, planning, evaluation and quality improvement of training programmes.

The current body of knowledge explaining potential factors associated with burnout and job satisfaction in

radiation oncology trainees is limited to a handful of studies,<sup>10,11</sup> with only one study using Australian data.<sup>1</sup> The correlates of burnout in radiation oncology specialists who have completed their training are more extensive.<sup>12,13</sup> From this collated data, it is possible to identify a number of individual and situational factors that are consistently associated with burnout in the radiation oncology field. These factors are wide ranging and it must be recognised that individuals experience stress differently according to their personal make-up, background experiences and unique situational demands.

The personal-contextual factors that have broadly been identified as helping prevent burnout and having resilience to chronic life stressors include possessing psychological qualities, such as optimism and having positive personal self-efficacy.<sup>14</sup> Having an active coping style is especially beneficial in managing heavy workloads and is associated with greater career success, and can be developed through training.<sup>15</sup> These personal qualities impact motivation, influencing an individual's vitality, dedication and absorption in work-related tasks.<sup>16</sup> The accumulation of multiple personal resources, such as the ability to effectively plan and achieve self-determined goals; optimism about expected outcomes accompanied by high levels of task involvement and resilience are positively related to well-being. These factors dynamically interact over time to influence engagement.<sup>17</sup>

Organisational and environmental resources, such as social support, access to peer mentoring, help and guidance from experienced work colleagues also play a noteworthy part, contributing to thriving and enhanced learning in the workforce.<sup>18</sup> Similarly, individuals who receive growth-enhancing feedback about their work and who feel that the effort they invest in the job has been recognised by others, are more likely to experience high personal accomplishment, satisfaction and well-being, as well as have potential health benefits.<sup>19</sup> Conversely, those who do not feel adequately rewarded for their work and who experience effort-reward imbalance are more likely to experience burnout and health-related ill effects related to the immune and cardiovascular sub-systems.<sup>20</sup> Other environmental factors, such as tensions surrounding workplace relationships and low managerial support are associated with cynicism and interpersonal distancing.<sup>13</sup>

Leung and Riaseco in their study of radiation oncology trainees found that variety in job-related tasks was associated with greater well-being, and this contributed to high perceived self-efficacy.<sup>1</sup> Work flow patterns where times of intense and sustained effort are interspersed with high-quality breaks and/or lower demand tasks may thus have merit in reducing burnout. Sustained effort in stressful, demanding tasks can have physiological and psychological costs, such as increased heart rate and prolonged activation of the parasympathetic nervous system. This is well recognised in burnout studies to be associated with exhaustion, particularly when the work

volume as well as intensity is high.<sup>21</sup> Long working hours that produce excessive demands on 'protected' time and disrupt family life and ability to pursue outside interests are particularly associated with emotional exhaustion.<sup>1,13</sup> It is also important to distinguish that workaholism and work engagement are distinctly different with the former being associated with ill health and psychological distress and the latter being positively related to well-being.<sup>22</sup>

An important starting point for guideline development is to educate trainers and trainees about times when individuals may be vulnerable to work stress. Learning how to recognise the warning signs of burnout and being aware of vulnerability is a vital first step. Ideally, education about the need for self-awareness and importance of self-care would occur in the early stages of training. The next step involves alerting practitioners regarding the extent and accessibility of information regarding evidence-based strategies that can be employed to address exhaustion and prevent disengagement. Recognising diversity in responsiveness and uptake of different strategies is important. Although there is no 'one size fits all' programme that can increase a trainee's motivation and prevent burnout, a global educational approach describing the range of evidence-based strategies shown to have benefits, alongside training in goal-setting and enactment is possible. The effectiveness of educational workshops for cancer care workers, including oncology nurses and radiation therapists has been demonstrated in a randomised control trial.<sup>23</sup> Further research extending this approach for radiation oncology trainees is warranted, as is research to evaluate different educational content delivery methods, including online, print, face-to-face, webinars or a combination of these approaches.

There are important potential benefits for individuals who understand the multiple factors associated with burnout and are educated about how motivation-related states, such as work engagement, can be optimised. These personal benefits can include improved mental and physical well-being, vitality and career success, social integration and flourishing. The opposite is seen when individuals are exhausted and disengaged. Depletion, fragmentation, anti-social behaviours and unhappiness are associated with feelings of pressure, introjection and low autonomous motivation.<sup>24</sup> There are organisational benefits when individuals are not burnt out, but rather, engaged, enthusiastic and vitally absorbed in their work. High engagement is associated with improved workforce stability, job commitment and work performance<sup>25</sup>; as well as high levels of productivity and creativity; as well as feelings of resourcefulness, efficiency and productivity.<sup>26</sup>

To motivate trainees to succeed in their chosen profession, it is helpful to understand some of the theoretical constructs surrounding motivation. Motivation can be either extrinsic or intrinsic. People are often moved by external factors such as reward systems, grades, evaluations or the opinions they fear others might have of them. Yet, just as frequently, people are motivated from

**Table 2.** Self-determination theory: Basic psychological needs in motivation

Competence	This basic psychological need describes the need to seek to feel effective in one's interactions with the environment, to experience opportunities for expansion and expression of one's talents and skills
Relatedness	The psychological need for relatedness is a universal want to interact, be connected to and experience caring for others. It refers to being responsive and sensitive to others, and feeling involved and having a sense of belonging
Autonomy	This is a universal urge to control one's life and act in harmony with one's self. It refers to feeling willingness to own one's actions and have a sense of volition about one's behaviours

within, by interests, a love of learning and the satisfaction of giving to others. These intrinsic motivations are inherently satisfying and can sustain interests, learning, creativity and effort. The interaction between the extrinsic forces acting on persons and the intrinsic motives and needs inherent in human nature is the territory of self-determination theory (SDT).

Self-Determination Theory is a broad framework for the study of human motivation. SDT provides a contemporary, formal meta-theory that defines intrinsic (i.e. autonomous) and extrinsic sources of motivation. Central to SDT is an organismic view that individuals innately try to synthesise internal and external regulated actions, experiences, values and knowledge so that they can grow and be effective in their own worlds. Richard Ryan and Edward L. Deci proposed that humans have three basic psychological needs, for competence, relatedness and autonomy.<sup>18</sup> Satisfaction of these needs contributes to healthy growth, vitality, coherence and wellness (Table 2). When these needs are neglected, the individual shows motivational decrements, such as lowered vitality, diminished well-being and low volition.<sup>24</sup>

An environment that supports the individual's experience of competence, relatedness and autonomy will foster motivation and work engagement which in turn will improve performance, energy, resilience and creativity. Novelty, optimal challenge, understanding and mastery are catalysers of intrinsic motivation, each satisfying the basic psychological need for competence. Autonomy-supportive conditions represent a means of renewing thriving and a state of being whole and feeling on top of things. Encouraging self-determined, inner growth through self-awareness and tangible, self-regulatory actions such as goal setting, can fortify persistence and thriving. The motivational 'pull' for satisfying relatedness needs include numerous social nutrients that will vary across contexts. Such factors as having a supportive peer network; recognition and affiliation with the college; having opportunities for benevolence, belonging and attachment at work; experiencing mentoring and advocacy from supervisors when there are adverse or hostile

**Table 3.** Framework for SDT

	Faculty	Workplace	Trainee
Competence	Burnout Surveys of members Interventional Workshops for DoT and members. Clear supportive curriculum to enhance the learning experience. Online educational resources. Mentorship programme	Regular constructive feedback from DoT. Access to educational resources such as text books, library, computer access.	Knowing personal strengths. Learning a new skill. Attending courses. Self-awareness Understanding the factors that lead to burnout. Time management skills
Relatedness	Mentorship programme for trainees.	Encouragement of study groups Regular debriefing with the DoT and supervisors. Social gatherings.	Study groups. Social support from other trainees. Supervisor support. Peer mentoring
Autonomy	Trainee representation on Faculty Council. Education board meeting the trainee's needs.	Flexible rostering. Quarantined study time.	Goal setting. Efficient work flow patterns Learning to switch off. Setting aside time for relaxation. Self-awareness Adequate sleep. Taking holidays

circumstances; may provide nutriment for social connectivity and support.

Self-determination theory proposes that the degree to which any of these three psychological needs is unsupported will have a detrimental impact on well-being. When needs are blocked, there is not only diminished volition and exhaustion, but a potential increase in defensive, compensatory behaviours, such as depersonalisation. The SDT framework has broad implications for understanding practices and structures that enhance versus diminish need satisfaction. This theory can be universally applied to many domains including work, education, sport and hobbies.

### Guidelines for promoting motivation

In developing strategies for increasing motivation and reducing burnout, there are three cornerstones to build on. These are the faculty, the workplace and the individual. SDT theory is applicable to all three and this will produce a strong foundation for trainees to optimise their performance. Table 3 summarises some of this framework.

#### Faculty of radiation oncology

The faculty needs to be aware of the prevalence of burnout in the trainee population. The recent cross-sectional study on stress and burnout within the trainees is evidence of the faculty's recognition of the problem.<sup>1</sup>

Workshops which promote interventions for recovery have some efficacy and have been tested in a randomised controlled trial for radiation therapists and

oncology nurses.<sup>23</sup> While this represents a challenge for organisations to take trainees offline, other approaches have been considered such as online interventions.

Effective mentoring requires training if it is to be effective. The mentor is required to be non-judgemental and supportive. Mentoring skills do not come naturally to everyone and courses to train the mentor are potential activities that could be invested in by the educational bodies such as the college.

#### Workplace environment

There are many opportunities for the trainee's work environment to impact positively on the levels of motivation. The Director of Training (DoT) should be pivotal in this role. One of the key actions for the DoT is to consider the importance of positive, constructive feedback. This needs to be buffered with criticism and informational feedback where appropriate. The importance of supervisor and co-worker support was confirmed in a cross-sectional study of cancer workers in Queensland.<sup>27</sup> Social support can take many forms and includes structured discussions, mentoring and debriefing with colleagues and other staff. When trainees work in relative isolation from peers and perceive low satisfaction with social support from supervisors or poor team engagement, then this can affect staff well-being, including burnout and disengagement.<sup>28</sup> Conversely, it can be predicted from the literature that engaged workers who experience social support are more likely to report positive emotions, experience better health, create their own job and personal resources, and transfer their engagement to others.<sup>29</sup>

According to the Job-Demands Resources (JD-R) model, job demands are primarily related to the exhaustion component of burnout, whereas a lack of job resources is related more to disengagement.<sup>30</sup> This model assumes that job resources such as social support from colleagues and supervisors, performance feedback and encouragement to grow skill sets influence motivational processes that lead to work engagement and consequently better job performance. When the demands of the job increase (e.g. higher patient numbers), the risk of exhaustion increases unless workers are equipped with the appropriate personal and job resources (e.g. co-worker support, well-functioning equipment).<sup>31</sup> Job resources, such as social support, can foster employees' vigour, dedication and absorption in work, as well as leading to personal growth, increased job competence and productivity. DoTs need to be cognisant of ways to develop a strong work culture which promotes the team rather than the individual as this a valuable forum to promote support.

The nature of support at work may take a number of different formats, including:

- Informational – where guidance, advice and reports can be obtained from colleagues on a critical matter;
- Emotional – providing care and trust in a reliable alliance where one can count on others for assistance in times of need;
- Instrumental – facilitation to complete tasks;
- Appraisal – evaluation and feedback, reassurance of one's worth.

### **Personal resources of trainees**

The link between improving job resources and increased worker engagement has been empirically supported in a study of Dutch employees.<sup>26</sup> Self-evaluation of personal strengths is infrequently utilised in the health sector, and yet it can be quickly and effectively evaluated through completion of the free online Values in Action (VIA) Signature Strengths Questionnaire (VIA Institute on Character). Knowledge of one's personal strengths satisfies a basic psychological need for competence, and perceived self-efficacy is a personal resource that has been linked with resilience.<sup>32</sup> Improving personal resources through positive strengths-based self-evaluation and development is also associated with improved motivation, job performance, life satisfaction and job retention.<sup>33</sup> Web-based interventions have been shown in randomised controlled trials to reduce the levels of depression and improve levels of happiness with benefits apparent at 6 months.<sup>34</sup> These interventions are relatively low cost and can be made available to large numbers in workers within an organisation.

A further method for trainees to develop their own support group is through study groups. This acts as a source of extrinsic motivation for meeting deadlines as well as

social support. Friendships that ensue from attendance at study groups are often life-long and strong. Face-to-face study groups may be difficult to organise in regional centres where there is only a single registrar. In these circumstances, the use of video conferencing is a practical alternative for maintaining trainee networks.

There are other recovery strategies that trainees may consider in promoting resilience. Taking a break during the working day, either with or without a colleague contributes to energy restoration. Going outside into the sunlight, or being surrounded by nature has additional restorative benefits, as does taking time to savour and examine the big picture in moments away from work itself. Time management is also important with the prioritisation of difficult tasks to a time when the trainee is fresh. In this digital age, it becomes increasingly difficult to switch off from work.

Daily recovery has been viewed as internal (i.e. happening at work) or external (i.e. occurring after work). *Internal recovery* may occur as a short break during work hours, for example, a coffee break with colleagues. *External recovery* before or after work, during weekends and holidays refers to engaging in replenishing activities that help rebalance suboptimal systems and return stress-related reactions to pre-stressor levels before the next working period commences, for example, a visit to the gym.

Job resources include activities such as participating in experiences offering a break or recovery from work-related demands and social support from supervisors and colleagues. Performance feedback can individually or collectively contribute to motivational processes that impact work engagement. Restoring or replenishing job and personal resources are of central importance in facilitating recovery from high or chronic job strain. High negative strain, occurring when job demands are high, acts in a manner to diminish resources. Resource-demand imbalance will have a detrimental effect on workers unless recovery is possible.<sup>35</sup>

While there has been considerable literature describing the mental, physical and occupational health strategies in high demand jobs, there has been less emphasis on the role of recovery during non-work periods. Daily recovery is crucial for the maintenance of well-being and job performance.<sup>36</sup> The greatest opportunities for reducing burnout are to improve job and personal resources.

'Switching off' from work is an important recovery strategy. In some circumstances, the boundaries between work and non-work domains become blurred and workers themselves need to set boundaries, attempting to separate their work and non-work roles. While organisations can encourage workers to prioritise recovery time, there is a need for workers to increase their own awareness of the need for recovery and to implement strategies both at work and after work. Workers might be able to learn relaxation techniques or to join other co-workers in opportunities for physical exercise. The literature would support the notion that exercise helps workers unwind from work<sup>37,38</sup>

and results in lower work stress,<sup>39</sup> reduced absenteeism<sup>40</sup> and improved job satisfaction.<sup>41</sup>

Relaxation is a process characterised by decreased sympathetic nervous system activation which leads to a reduced heart rate, muscle tensions and has been associated with positive affect. The positive emotions generated from relaxation experiences are also essential to the recovery process, as the quality of the time-out activity is regarded as being an important ingredient of restorative benefits. Relaxation diverts the attention away from the stresses of work. Having insufficient time for relaxation increases the perceived need for recovery which is associated with burnout and sleep disturbance.<sup>42</sup> Impaired recovery through sleep may also impair recovery from burnout independently of the influence of depression. Workers with high levels of fatigue typically have fewer hours sleep and require extra effort to carry out their work than colleagues with low levels of fatigue.<sup>35</sup> Information on healthy sleep hygiene practices, incorporating 'wind-down' relaxation activities before bedtime is recommended as an additional component of recovery-oriented interventions.<sup>43</sup>

Recovery experiences are varied and different elements/practices will appeal to a range of trainees. Broadly speaking, recovery experiences can be grouped under four headings: psychological detachment, relaxation, mastery experiences and control over leisure time.<sup>42</sup> Psychological detachment is defined as the sense of being away from work both physically and mentally. People, who disconnect from work in the evening and do not ruminate about past stressors or anticipation of future stressors, are more likely to experience positive mood and less fatigue the following day.<sup>44</sup> Psychological detachment from work-related thoughts during the out-of-work hours is an important buffer that protects worker's well-being and promotes work engagement on return to work.<sup>45</sup> Trainees need to learn to 'switch off' after work or study to allow restoration to occur. Relaxation may involve informal and unstructured activities, such as listening to music, attending the movies or going for a jog. Many structured pursuits, such yoga, or organised team sports, also provide opportunities for relaxation. Mastery experiences involve taking on a new challenge outside of work such as learning a new language or learning a new skill. Mastery and control over leisure time have been shown to be negatively associated with emotional exhaustion and positively associated with life satisfaction.<sup>42</sup> These strategies are not specific for radiation oncology trainees and apply equally to everyone. The elements autonomy, competence and relatedness are the cornerstones and are adaptable to the trainees' circumstances. Support from senior trainees and consultants during the treatment supervision, contouring and ward rounds will help in developing competency and promote relatedness. Trainees should develop their own strategies with this framework in mind and this need to be supported by activities from the college and

the local institution. An active radiation oncology trainee network is an important backbone to support trainees during these challenging but rewarding years. The 'study buddy' should be encouraged as this will provide invaluable support and encouragement to the trainee.

## Summary

In summary, SDT provides a theoretic framework to help promote motivation and reduce burnout for trainees in radiation oncology. The key concepts of satisfying rather than undermining autonomy, competence and relatedness basic psychological needs are applicable at multiple levels within the context of a trainee's life. The faculty has an opportunity to act as a facilitator of information about recognising burnout, and increasing healthy practices to improve self-care throughout life and strategies that promote work engagement and motivation. The art of being a good mentor is something that is not instinctive for all clinical supervisors; hence, guidance to develop skills in this area would be helpful. The most important consideration for trainees is to attend to their own self-care, to improve self-awareness of times when sympathetic nervous system activation is prolonged, to seek help when experiencing acute and chronic stress, to learn how to improve their own personal resources to protect against burnout and to build healthy work-life balance habits into their own schedules. These are important lessons for life which will keep them 'fit for the long run' of being a radiation oncologist. This in turn should reduce the probability of losing members from the profession, improve well-being and patient care.

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