



**Submission to the Joint Standing Committee  
For Defence, Foreign Affairs and Trade**

**Inquiry into the Care of ADF Personnel  
Wounded and Injured on Operations**

**The use of Trauma Release Exercises for  
Resilience Training & Early Intervention in the ADF**

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## EXECUTIVE SUMMARY

Trauma Release Exercises, (TRE) is an innovative process consisting of simple exercises designed to invoke an instinctual reflex of the body to discharge and release the effects of trauma through intentional tremors. As TRE assists immediate recovery as well as maximising psychological and physical resilience, it can be used as part of routine recovery processes to ensure it is not stigmatised as a 'psychological' or 'mental health' process, while still addressing PTSD and depression both during and after military service.

TRE has been used by military personnel in the US, Canada, Brazil, Norway and Sweden. The TRE process was reviewed in the report 'Mind Body Techniques to Regulate the Autonomic Nervous System,' conducted by the US Defence Centres for Excellence in Psychological Health and mild Traumatic Brain Injury in 2011. The review included a number of techniques already used by the ADF, with TRE identified as one of the 5 most promising techniques 'for its ease of use, reduction of hyper-arousal and reports of immediate benefits.' TRE was therefore included in a subsequent trial conducted by the Samuelli Institute involving 5000 US Marines pre and post deployment to Afghanistan and Iraq.

As TRE does not require talking about traumatic events, and can be used either alone or in large groups in any operational setting, it could be efficiently introduced as an additional module of the existing SMART resilience training program. TRE could also be integrated into the Keep Your Mates Safe – Peer Support program, (KYMS-PS) with additional training provided to junior leaders embedded in units as part of the KYMS – Leader program to further enhance its effect as a non-clinical early intervention technique for personnel exposed to extreme trauma.

The addition of TRE to BattleSMART, LifeSMART and FamilySMART resilience training modules would not only provide a practical technique for both personnel and their families, but also provide a neurophysiological understanding of trauma that significantly destigmatises mental health and the psychological, emotional, and behavioural symptoms currently portrayed as a 'mental illness' or 'mental health disorder.'

While there is currently no data available for the ADF, the US Congressional Budget Office estimate the additional health care costs alone in the first year for a soldier diagnosed with PTSD, (not including further costs such as income support) is in the range of US\$5000 - \$10,000, noting nearly all personnel with both PTSD and mild Traumatic Brain Injury were still receiving ongoing care after four years.

TRE is extremely cost effective. It can be introduced to large groups in a 2 – 3 hour training session at an approximate cost of \$50 per individual. US figures suggest the implementation of TRE would only need to prevent the onset of PTSD or depression in less than 1% of personnel taught to be significantly cost effective in comparison with current treatment costs alone.

The Australian Rehabilitation and Compensation Commission estimates the average cost of a compensation claim due to mental stress in the general community is approximately \$140,000. At even conservative estimates, these Australian figures suggest TRE would only need to prevent PTSD or depression in 1 out of every 2000 personnel taught in order to be substantially cost effective. Further cost benefits are likely due to additional reductions in the effects of occupational stress including transitional and readjustment stress post deployment.

There is the potential for the ADF to run a cost, time and resource efficient clinical trial through the introduction of TRE to a limited number of units in order to create a sub-sample of the existing LASER-Resilience research project. This would allow for a direct comparison between the ADF's existing SMART training with the addition of TRE, in comparison to the SMART training alone.

Given the potential to address a key knowledge gap in relation to the use of intentional tremors to discharge the effects of trauma, the potential to significantly enhance service-wide resilience and early intervention programs, and the potential to significantly de-stigmatise the effects of trauma and 'mental health' as a whole, it is requested the inquiry make a clear recommendation for the ADF to implement a clinical trial on a large enough scale to accurately measure the effects of TRE upon the physical and mental health of their personnel.

## **1. The Role of the Body in Trauma**

The ADF report the estimated prevalence of depression and PTSD amongst personnel is higher than in the general community,<sup>1</sup> yet there is common opinion<sup>2</sup> that post-traumatic mental health issues may be a larger problem than these figures suggest. Regardless of the exact numbers, the ADF acknowledges mental health has the potential to have ‘a substantial impact on individual wellbeing and operational capacity.’<sup>3</sup>

While the ADF is to be commended for the extensive programs they have already developed, they have also acknowledged more can and needs to be done with a foundational commitment to ‘innovation and research that improves our understanding of mental health and wellbeing.’<sup>4</sup> The Chief of the Defence Force, General David Hurley also acknowledged in 2011 that while ‘mental health programs are working, the ADF would always strive to do better.’<sup>5</sup>

While rates of PTSD are significantly more prevalent than in the matched community sample, of equal concern is the less talked about issue of depressive episodes, which are also significantly higher than in the Australian community, especially in the younger age groups.<sup>6</sup> While depression and PTSD have traditionally been seen as falling almost exclusively within the fields of psychology and psychiatry, ‘many trauma therapists are recognising that trauma affects the body as much as it does the mind and the emotions of the individual.’<sup>7</sup>

### **Trauma involves an instinctual body response in addition to psychological distress**

Babette Rothschild, an internationally recognised trauma therapist states, ‘one only has to read the most basic of literature on the function of the brain, the nervous system and the physiology of stress to understand that the mind and the body are undeniably linked.’<sup>8</sup>

Dr David Berceci, founder of Trauma Release Exercise, (TRE) states in his 2004 book, ‘Trauma Release Exercises,’ ‘the cross fertilisation of fields of study such as psycho-biology and neuro-physiology are revealing new levels of understanding of the effects of trauma on the body. Whether the trauma occurs in a psychological, physical, emotional or interpersonal form, it

inevitably expresses itself in the body. This shift in awareness is increasing the recognition that trauma is primarily an instinctual *bodily reaction*.<sup>9</sup>

Acknowledging the artificial gap that has historically separated physical and mental health, the US Defence Centre for Excellence for Psychological Health and Traumatic Brain Injury has recommended in its review of Mind-Body Skills for Regulating the Autonomic Nervous System that a 'systems perspective on health and resilience seeks to establish good functioning and balance across *all body systems*.'<sup>10</sup> [my emphasis]

The DVA, in its paper outlining the Heads of Workers Compensation Authorities (HWCA) and Heads of Compulsory Third Party (HCTP) approach to injury management, also recognises a *biopsychosocial* approach to injury management as 'critical to improving outcomes when managing injured workers,' stating that 'understanding and preventing incapacity requires a framework that addresses all the *physical*, psychological and social factors involved in human illness and disability.'<sup>11</sup> [my emphasis]

Professor AC McFarlane, Head of the University of Adelaide Centre for Traumatic Stress Studies and previous Senior Adviser in Psychiatry to the Australian Defence Force, also identified the issue of needing to incorporate the body in addressing PTSD, stating in his submission to this inquiry 'there is now a substantial body of evidence highlighting how psychiatric disorders arising out of combat exposure are caused by the impact of traumatic stress on *neurobiological* systems.'<sup>12</sup> [my emphasis]

### **The body must be included in a bio-psycho-social model of mental health**

The artificial split between mental and physical health is outlined by the Australian Centre for Post Traumatic Mental Health in their Draft Australian Guidelines for the Treatment of ASD and PTSD. While themselves acknowledging a traumatic 'injury is characterised by *biological*, psychological, and social aspects (i.e., a biopsychosocial model.)' [my emphasis added] the guidelines explain in mental health terms, trauma refers to 'an injury or wound to the psyche; that is, damage to a person's emotional or psychological wellbeing.'<sup>13</sup>

For this reason, most research on posttraumatic stress disorder has to date been focused upon the field of psychology, such that ‘most of the recovery programs primarily address the psychological and emotional dimensions of the individual,’<sup>14</sup> without having yet focused upon the concurrent neurophysiological responses of the body itself.

The US Defence Centres for Excellence for Psychological Health and Traumatic Brain Injury, in their review of Mind-Body Skills for Regulating the Autonomic Nervous System reported, ‘much research has been dedicated to study the effects of stress on emotion and behaviour and how this is encoded in facial expressions, postures and *muscle stiffness*,’ [my emphasis] as well as recognising that ‘stress and anxiety are reflected in the body in numerous ways with basic physiological responses to stress including changes in the relative activity of the autonomic nervous system.’<sup>15</sup>

The proliferation of research into mild Traumatic Brain Injury is a current example of the way the body and its neurophysiological mechanisms are gradually being recognised as a contributing factor to ‘mental health’ disorders, and is suggestive of the potential for innovative treatments that utilise the body itself, both as a treatment resource and as an additional entry point for existing treatment methods.

### **High rates of depression in the ADF may be directly linked to unresolved trauma**

The significance of investigating a neuro-physiological approach to trauma in alignment with the ACPMH’s Guidelines that ‘future research should focus on furthering our understanding of what *mechanisms* are involved in the development and maintenance of PTSD and by extension, what *mechanisms* need to be targeted in treatment,’<sup>16</sup> [my emphasis] may also be relevant to the significantly higher rates of depression amongst ADF personnel.

While higher than normal rates of PTSD are not unexpected considering the types of occupational risks in the military,<sup>17</sup> there is currently no clear understanding as to why rates of depression are also significantly higher, apart from the suggestion occupational stressors of military service may result in earlier onset of these disorders.<sup>18</sup>

The US Centre for Excellence acknowledges that the Polyvagal theory developed by Dr Stephen Porges ‘provides an organising principle by which we might better understand how some individuals, especially those who experience trauma or high levels of stress, experience a dysfunctional imbalance’<sup>19</sup> of their autonomic nervous system as a possible contributing factor towards these higher rates of depression.

When depression and PTSD are viewed neuro-physiologically according to Porges’ theory rather than as two separate disorders, they are *both* able to be placed on the same continuum of our body’s innate neurophysiological responses to stress and trauma.<sup>20</sup> This raises the possibility such high rates of depression may also be directly linked to the effects of unresolved trauma.

### **The effects of exercise and movement on mental health are well recognised**

The clinical importance of incorporating the body through exercise is recognised in the ACPMH’s Australian Guidelines for the Treatment of ASD and PTSD. Their ‘Good Practice Point 66’ recommends practitioners may wish to ‘advise people with PTSD that regular aerobic exercise can be helpful in managing their symptoms and as part of self care practices more generally,’ as well as reporting that ‘exercise may assist in the management of sleep disturbances and somatic symptoms that are common accompaniments of PTSD.’<sup>21</sup>

A brief review of literature would show exercise as being as effective as other treatments for stress and mild depression, again pointing to the potential of using the body itself as a treatment resource as well an additional point of entry for existing techniques.

While a number of military based PTSD recovery centres in the US have already introduced body based practices such as yoga, the US Defence Centres for Excellence in Psychological Health and Traumatic Brain Injury, in their review of Mind Body Skills for Regulating the Autonomic Nervous System report that ‘integrative practices to regulate the ANS and improve mood, stress regulation and arousal are *promising*,’ recommending ‘a need for *more studies* that examine promising integrative practices within the context of ‘real world’ military operational settings.’<sup>22</sup> [my emphasis]



The US Defence Centres for Excellence also outline ‘compelling research relating how one might use postures and *physical movements* to create specific emotional states that can be measured via ANS activity. One classic example is the use of voluntary facial expressions, such as smiling, resulting in ANS activity associated with happiness.’<sup>23</sup>

### **The musculo-skeletal system has its own specific response to stress and trauma**

As part of the cascade of neurophysiological responses automatically initiated during stress and trauma, the musculo-skeletal system itself directly responds by unconsciously creating muscular contractions and movements as part of our fight or flight responses. In his foreword to the book ‘Trauma and the Body,’ Bessel Van der Kolk, outlines that in response to stress and trauma, ‘both neurochemistry and emotions are activated in order to bring about certain bodily postures and *physical movements* that are meant to protect, engage and defend.’<sup>24</sup> [my emphasis]

An example of these automatic muscular contraction patterns is the way the body instinctually moves towards a ‘foetal position’ to protect it’s more vulnerable front side, through the unconscious activation of the large flexor muscles at the front of the body (often referred to as our ‘fight or flight muscles’) at the same time inhibiting the extensor muscles located at the back of the body in a process known as flexor withdrawal.<sup>25</sup>

Critically, if our body’s instinctual urges to fight or flee are unable to be expressed for any reason, (such as in an operational setting where it may be inappropriate or unsafe to move) the musculo-skeletal system contains the movements associated with these arousal states by creating unconscious and low level muscular tension that prevents the body from moving, instead ‘holding’ it in an ongoing position of ‘tense readiness.’<sup>26</sup>

While this musculo-skeletal containment of our fight and flight urges is of itself not a problem, ongoing activation of this ‘on alert’ muscular pattern due to its incomplete discharge results in chronic tension that can be a significant contributor to a range of ‘physical’ conditions such as low back, neck and shoulder pain. These ongoing and unconscious contractions also help create perpetual states of low-level arousal as part of the autonomic nervous system’s feedback

loop, and must be discharged and released in order for the body and mind to return to a calm and relaxed state.

The originator of Trauma Release Exercises, (TRE) Dr David Berceci PhD, simply states, 'if the human body has evolved with unconscious reflexes to create arousal and muscular tension in response to trauma, doesn't it makes sense it would have also evolved with similarly unconscious reflexes to release this tension afterwards.'<sup>27</sup>

One of the body's primary reflexes to release the neuromuscular effects of trauma is the spontaneous tremoring and shaking commonly experienced during situations of heightened stress, such as when public speaking, or after extreme trauma such as a car accident or a natural disaster. As these tremors are spontaneous in nature and are created and organised by the brain and nervous system well below the level of cognitive input, they are referred to as '*neurogenic tremors*,' reflecting their innate origins within the nervous system itself.

As TRE invokes the body to generate neurogenic tremors to release its neurophysiological response to stress and trauma, the investigation and research into the use of TRE in the military setting provides an opportunity for the ADF to reintegrate the body into a more complete *biopsychosocial* approach to resilience training and trauma recovery, and to provide its personnel the maximum 'adaptability and resilience in the face of adversity.'<sup>28</sup>

## **2. Our Body Discharges Trauma through Neurogenic Tremors**

Just as for many ADF personnel who have experienced trauma, Sergeant McQuilty Quirke in the ADF video 'Dents In the Soul' refers to 'shaking' as one of a number of initially uncontrollable responses he experienced following combat.

It is well known in cultures all around the world spontaneous tremors and shaking are a common result of a stressful or traumatic event. It is not uncommon to hear phrases such as 'I was so frightened my jaw was quivering,' 'my hands were shaking so bad I couldn't calm myself down,' 'my legs were trembling as I gave my speech' or even 'I was so angry I shook.'<sup>29</sup>

Tremors are so readily observed in trauma therapies they are already recognised as a diagnostic '*symptom*' of a range of mental health disorders including Panic Attacks, Social Phobias, Generalised Anxiety Disorder and Post Traumatic Stress Disorder, 'even though the purpose, aetiology and potential therapeutic value of these tremors has received little attention in relation to the number of cases reported.'<sup>30</sup>

As mental health has to date been heavily focused upon psychological and behavioural symptoms and cognitive behavioural approaches to treatment, neurogenic tremors that have a 'physiological rather than a psychological origin'<sup>31</sup> have so far received little attention within existing mental health research.

### **Tremors discharge and complete the body's response to stress and trauma**

Trauma expert and founder of Somatic Experiencing, Dr Peter Levine was one of the first therapists to recognise the primary role of spontaneous shaking and tremoring in humans as a vital discharge of unresolved fight, flight and freeze responses, similar to that which had already been widely observed and studied in animals.<sup>32</sup>

Levine recounted in his ground-breaking book 'Waking the Tiger,' a conversation he had with African game keepers who stated that while wild animals commonly enter a freeze, or immobility response after capture, upon release, they will usually go through a form of

behaviour typical of the freeze discharge, noting 'if they do *not* go through a period of shaking however, they will usually die after release into the wild.'<sup>33</sup> [my emphasis]

Levine addresses the specific role of tremors in this discharge process, stating, 'to complete it's biological and meaningful course of action [to trauma] the [human] organism requires the spontaneous shaking and trembling that we see throughout the animal world.'<sup>34</sup>

### **Neurogenic tremors often occur naturally after trauma if they are not suppressed**

If not suppressed, tremors often occur spontaneously following a stressful or traumatic event to restore the body and autonomic nervous system to a calm, relaxed and balanced state. This process is referred to as 'allostasis,' defining the innate processes by which the autonomic nervous system *re-organises itself* after trauma, including 'the recovery and the maintenance of internal balance and viability amidst changing circumstances consequential to stress.'<sup>35</sup>

The recognition that unconscious self-regulatory reflexes already exist in the body also provides the opportunity for innovative ways to support, mobilise and enhance these processes. This gives rise to the concept of building '*neurophysiological resilience*' as a core component of a more complete biopsychosocial approach to resilience training.

While techniques taught to control arousal generally tend to be focused upon cognitively changing or controlling the responses the body may be naturally producing, it is the *involuntary* nature of the tremors and the process of consciously and intentionally *allowing* them that facilitates the autonomic nervous system's own self-regulatory processes to *restore itself* to a calm and relaxed state.

Dr Berceci explains, 'this is where tremors have the advantage, because they [tremors] are generated from within the limbic system of the brain, they are not under conscious control and bypass the thinking brain, giving us direct access to the unconscious reptilian brain to bring about changes that we couldn't otherwise accomplish.'<sup>36</sup>

## **Neurogenic tremors are *not* part of the body's arousal response to trauma**

In the ADF's BattleSMART resilience training, tremors and shaking are mentioned as one possible reaction amongst a range of potential responses to trauma, but are not covered in any more detail than this.<sup>37</sup>

These tremors are however critically different from other 'possible reactions' (such as increased heart rate and altered breathing) as they are instead reflecting the *body's innate reflex* to discharge, complete and 'down-regulate' these arousal responses to return itself to a calm and relaxed state after stress or trauma.

Neurogenic tremors are not part of our mobilising response (fight or flight), as they do not create movement of the body towards or away from a potential threat, nor are they part of the immobilising response, (freeze and fold) as they create obvious movements easily detectable by a potential 'predator.'

## **Neurogenic tremors extinguish our body's conditioned responses to stress and trauma**

Barbara Herman and colleagues from the US National Centre for PTSD in their August 2012 Military Medicine article on the Epidemiology and Prevention of Combat Related Post Traumatic Stress, outlined 'the classical conditioning model of PTSD predicts that improvement can be achieved through extinction of a conditioned fear response reaction, thus reducing trauma related anxiety.'<sup>38</sup>

Dr Robert Scaer, an internationally recognised trauma expert with both clinical and personal experience of the TRE process, and in direct correlation with the findings of Herman, states 'in short, neurogenic tremors seem to achieve extinction of a conditioned sensorimotor response.'<sup>39</sup>

Scaer also suggests 'tremors seem to be able to inhibit or down regulate the amygdale,' (reducing arousal) noting 'all effective therapy works through this mechanism.'<sup>40</sup> The importance of down-regulating the amygdale is in correlation with the findings of the

Australian Centre for Post Traumatic Mental Health's 2002 – 2012 literature review stating that 'a focus on the early reduction of hyper-arousal symptoms may be a beneficial approach to therapy.'<sup>41</sup>

### **Neurogenic tremors build resilience and increase post trauma adaptation**

In addition to their role in the immediate recovery from trauma, tremors also play a vital role in *post trauma adaptation* and *resilience building*, as shown in numerous animal studies. One crude but effective study involved traumatising baby chickens then placing them in water and assessing the time it took them to drown as a measure of their resilience.

The chicks had been assigned to either a control group, a second group that had been traumatised then allowed their natural 'trembling and fluttering' discharge, or a third group which had also been traumatised but then had their spontaneous movements suppressed by being continuously held once they began trembling.

When the group that had been traumatised and allowed their discharge were placed in the water, they turned out to have *even greater endurance* than the control group who had not been traumatised at all. 'In other words, the traumatised chicks that were allowed to discharge [through spontaneous movement and trembling] had become *more resilient*.'<sup>42</sup>

Just as significantly, when the group who had been traumatised but *not allowed* this natural discharge were placed in the water, they gave up swimming and drowned *much earlier*, (even than the control group that had not been traumatised at all) displaying the common behavioural symptoms of helplessness and hopelessness often associated with depression.

Investigation and research into the use of neurogenic tremors in the aftermath of trauma may therefore offer the ADF an opportunity to investigate unresolved trauma as a potentially significant factor in the higher rates and earlier onset of depression, *especially in the younger age groups*, that so far, has only been speculated to possibly be due to occupational stressors of military service.'<sup>43</sup>

## **Neurogenic tremors are routinely suppressed in the ADF**

Currently in the ADF, without specific education as to their role in resilience building, trauma recovery and post trauma adaptation, spontaneous tremors are routinely suppressed by personnel as a sign of weakness or being scared, and stigmatised as a 'symptom' of being 'out of control' or at risk of being diagnosed with a mental health disorder.

Neurogenic tremors are also suppressed by health professionals through the use of medication. While reducing tremors when perceived as a *symptom* of PTSD appears to make clinical sense, such treatments may be inadvertently preventing the very process the body is seeking to activate as part of its natural process to *re-regulate* the autonomic nervous system in order to naturally recover from stress and trauma.

In his 2009 book 'The Revolutionary Trauma Release Process', the developer of TRE, Dr David Berceli PhD states, 'by reinforcing and harnessing these primordial and instinctual tremors instead of treating them as if they were pathological, we are able to resolve the bodily manifestations of the overactive state of our sympathetic nervous system, restoring a state of balance.'<sup>44</sup>

While neurogenic tremors are yet to be utilised by the medical community for their capacity to assist trauma recovery, Berceli notes this releasing mechanism is 'thankfully, still very much alive in our bodies, simply waiting for us to reactivate it.'<sup>45</sup>

It is the aim of this submission to suggest the lack of understanding, research and education about the self-regulatory role of neurogenic tremors may be a significant knowledge gap in current approaches to the prevention and treatment of PTSD and depression. This knowledge gap could be initially addressed through the implementation of a clinical trial of TRE in accordance with the ADF's strategic objective for a 'rigorous research program that is priority driven and addresses key knowledge gaps.'<sup>46</sup>

### **3. Neurogenic Tremors can be intentionally invoked through TRE**

While neurogenic tremors occur spontaneously to re-regulate the body to a calm and relaxed state after heightened arousal, (including both fear *and excitement* responses) these tremors can be intentionally activated in a safe and controlled way using a simple series of exercises known as Tension and Trauma Release Exercises or 'TRE.'

TRE was originally developed by Dr David Berceil PhD, who after experiencing their use as part of his own recovery from PTSD, developed the process as an empowering self care method to address 'mass scale trauma' as it was both unfeasible, as well as disempowering, to provide individual or ongoing therapy to large populations affected by natural disasters or war.

While intentional tremors can be activated in a number of ways, (such as specifically recalling or talking about past trauma) Dr Berceil has refined the TRE process over the last 20 years to create the most efficient and safe way of activating tremors using simple exercises. This means TRE does not require the recall or discussion of past experiences and makes them extremely attractive to military personnel.

#### **TRE invokes intentional tremors in a safe and controlled way using simple exercises**

The TRE process consists of simple standing exercises that gently stretch and fatigue the large fight or flight muscles of the legs, pelvis and lower back. These exercises initially invoke 'fatigue' or 'muscular tremors,' similar to what anyone may experience lifting weights in the gym or after strenuous exercise.

By lying on the floor and maintaining the tremor while gradually reducing the load upon the muscles, a deeper, unconscious tremor is then activated from deep within the brain and the nervous system itself, and well below our level of cognitive input.

While the intentional tremors generated during TRE are organised below the level of conscious control, they can be turned off through simple changes in position or by deliberately inhibiting them through a range of cognitive techniques such as 'grounding and breathing' as taught



within the existing SMART resilience program and endorsed by Creamer and Forbes from the Australian Centre for Post Traumatic Mental Health.<sup>47</sup>

This ability to cognitively stop the tremors on demand allows the process to be both *self initiated* and *self regulated*, making it an extremely empowering self care process that once learnt, provides life long access to a free internal resource that can then be used either at call or on a regular basis without requiring the ongoing assistance of a therapist.

### **TRE can be performed in any environment including operational settings**

While the series of simple exercises taking between 10 to 20 minutes is used to activate the tremors for the first time, as the tremor reflex is part of the genetic make up of the human organism, the tremors are soon able to be activated without requiring the use of the lead in exercises using simple leg positions while lying down or even in sitting.

This allows TRE to be used in any environment, including operational settings and upon return to base, or even in bed at the end of the day to assist with sleep. Deeper and more restful sleep is one of the most common benefits reported from the use of TRE by military personnel and critical to maintaining wellbeing and optimising performance in the military setting. This flexibility allows TRE to also be used return from deployment and during the transition to civilian life as well.

### **TRE releases trauma without having to focus, recall or talk about past events**

One of the most significant aspects of TRE and especially relevant to military personnel, is the process is focused upon the release of the *neurophysiological tension* the body creates in response to trauma without focussing upon the psychological content of these past experiences.

This allows TRE to be practiced without having to recall, focus on or talk about past traumatic events, with the body being re-experienced as a *self empowering resource* with its own innate capacity to self regulate arousal in the aftermath of trauma.

The ongoing suppression of the body's natural desire to 'let go' and discharge the effects of trauma also consumes considerable energy and is a possible contributor towards the common experience of battle fatigue.

In comparison to many techniques such as meditation, progressive muscle relaxation and mindfulness, TRE is especially appealing to military personnel as the process does generally not require cognitive input or focussed attention, and can therefore be performed while still engaging with colleagues about potentially unrelated events, or even while reading a book or watching television.

### **TRE is a self-empowering self-care process**

While TRE can be used as an early intervention strategy or a therapeutic tool for the treatment of depression and PTSD, it is first and foremost, a process of *self-care* that supports and re-mobilises an existing natural resource that is *already within the body*.

Such self-care approaches are listed as the very foundation of the 'pyramid of mental health and psychological services' by the ADF, also recognising that 'self-care is most effective when it is supported by formal health services.'<sup>48</sup> To date however, tremors are only mentioned as one possible natural reaction to trauma without any further education as to their role and purpose in the body's recovery from trauma.

Given animal studies suggest there may also be significantly detrimental effects upon resilience and trauma recovery when this natural discharge of fight and flight responses is *not allowed*, it would appear an urgent priority research area as neurogenic tremors continue to be suppressed individually, medically and culturally in the ADF, just as in they are in the general community.

#### **4. TRE for Reducing Mental Health Stigma**

‘Addressing stigma and barriers to care’ was identified by the ADF as one of 7 priority actions of their 2011 Mental Health Strategy, ‘with junior personnel more likely to perceive organisational barriers to seeking care and officers to perceive stigma about mental illness.’<sup>49</sup>

The Australian Centre for Post Traumatic Mental Health’s 2011 review of Military and Veteran Mental Health and Traumatic Stress Literature also stated that ‘*Mental illness* stigma and access barriers are consistently raised as deterrents to mental health care in military populations,’ although ‘personal beliefs about mental illness were identified as an area modifiable by interventions such as education and contact with stigmatised groups.’<sup>50</sup> [my emphasis]

#### **Presenting trauma as an instinctual response of the body reduces mental health stigma**

The ADF’s current strategy to address the overwhelming issue of stigma is outlined in the 2011 Mental Health Strategy, recommending a priority action consisting of a ‘comprehensive communications strategy with specific messages targeting these populations, [junior personnel and officers.]’<sup>51</sup> No specific recommendation is made however, as to what the *content* of such a communications strategy should ideally be. It is most likely to follow current approaches that focus upon promoting ‘help seeking as a sign of strength’ and attempts to destigmatise *mental illness*, as some benefits have been reported in these types of programs in the UK.<sup>52</sup>

This content and approach has been the basis for existing mental health promotion for a number of years, not only in the ADF but also in the general community. While ‘normalising mental illness’ and promoting ‘help seeking as a sign of strength’ has shown some effect in the military setting, increasing the frequency and volume of these messages appears unlikely to fully overcome the culturally embedded stigma around ‘*mental illness*’ that accompanies a diagnosis of conditions such as PTSD and depression.

A year after the release of the 2011 Mental Health Strategy, Major General John Cantwell who himself has presented to this inquiry, is still of the opinion that ‘the defence organisation, the organism, has not yet made the transition to deal with emotional wounds in the same way it

does with physical wounds,' and while acutely aware of current ADF mental health strategies, still suggests in the future 'the number of soldiers suffering from psychological disorders would grow exponentially.'<sup>53</sup>

Lieutenant General Peter Leahy, Chairman of the board of Soldier On provides a clear example of the need to remove the stigma created by current 'psychological labelling' of the effects of trauma by referring to 'PTSD' as 'Post Traumatic Stress *Injury*' instead, in direct accordance with findings by the Australian Centre for Post Traumatic Mental Health that 'ways of communicating with veterans that validate their experiences *as warriors* are important.'<sup>54</sup> [my emphasis]

While the ADF's 2011 mental health strategy 'suggests a comprehensive communications strategy' is required to address stigma and the barriers to care'<sup>55</sup> this submission proposes that such communications should incorporate a neurophysiological model of trauma, as this approach has the potential to reduce the stigma created by the 'psychological' categorisation of post trauma responses as a *mental illness* or a *mental health disorder*, through a fundamental paradigm shift that views, understands and treats trauma as an instinctual response of the body as well.

### **Everybody has been affected by trauma to some degree**

A critical concept provided by a neurophysiological understanding of trauma is the baseline state of the human organism is one that is naturally calm, relaxed and socially engaged, such that all other states and behaviours outside this are reflections of instinctual, habitual and unconscious trauma based responses that are neurophysiological in origin, rather than being seen as a flaw in the 'personality' or 'identity' of the individual.

With this understanding of our baseline state being naturally calm and socially engaged, it is readily recognised we are all affected by unresolved trauma to some degree with the effects on a scale that ranges from mild to extreme. This understanding helps remove the stigma created by the artificial categorisation of those with extreme reactions as having a diagnosable 'mental illness' or 'disorder' and provides an understanding all our neurophysiological responses are

both instinctual and 'normal,' and only differ in degree according to a range of internal and external factors at the time.

### **TRE helps facilitate the shift to a neurophysiological understanding of trauma**

The use of TRE provides an avenue to facilitate this shift and re-contextualisation of trauma to a neurophysiological model in four significant ways;

- TRE provides an opportunity for personnel to experience their body's ability to re-regulate arousal is *not* primarily determined by their *mental state* or level of *psychological control*
- TRE provides an experience of the generic discharge of arousal in a safe, controlled and *stigma free* way generally unrelated to the psychological content of past experiences
- TRE provides an experience of a more grounded and physically relaxed baseline state, creating greater awareness of when *the body itself* is in a traumatised state *before* the onset of psychological symptoms
- As TRE is able to invoke intentional tremors on demand, it allows for significant ease in their neurophysiological study and investigation in the clinical or laboratory setting

### **TRE normalises the natural discharge of arousal states through intentional tremors**

In addition to reducing the stigma associated with mental health as a whole, education and training in the use of TRE has the potential to significantly reduce the stigma associated with neurogenic tremors themselves, by normalising their role in the natural discharge and completion of fight, flight and freeze responses currently misunderstood and routinely suppressed within both the ADF and the general community.

During the 2012 SBS Insight Program entitled 'Shell Shocked', ex-soldier James Prascevic mentioned he was 'shaking so *bad*,'<sup>56</sup> while listening to his fellow soldiers recounting stories from combat and their own experiences of PTSD.

James' experience provides a simple example of the way this natural physical discharge through spontaneous tremors remains misunderstood, stigmatised and suppressed by ADF personnel, with the potential to significantly reduce their body's natural ability for resilience, recovery and post trauma adaptation.

## **5. TRE for Building Service-wide Resilience**

Strategic objective 2 of the ADF's 2011 Mental Health Strategy is 'a mental health and psychological support continuum that maximises the resilience of ADF personnel so they can adapt to all aspects of military service.'<sup>57</sup>

As there is currently 'no evidence of primary prevention interventions (that target the whole population of military personnel) to prevent combat related PTSD,'<sup>58</sup> the development and investment in the service wide implementation of the SMART resilience program is a clear example of both the vital need to build resilience amongst personnel, and the ADF's commitment to developing and implementing innovative approaches to building resilience *even if they are not yet evidence based*.

### **TRE builds neurophysiological, as well as psychological resilience**

As previously outlined in this submission, as our response to stress and trauma incorporates instinctual and unconscious responses of the body that occur without our cognitive intervention, it is important to incorporate body based strategies that support and enhance the body's own natural self-regulating process to build both *neurophysiological and* psychological resilience as part of a biopsychosocial approach to resilience training.

The specific role of the body's natural discharge in building resilience has already been outlined in this submission in relation to animal studies showing 'when an animal doesn't discharge the freeze response, it loses its resilience, lowering it's capacity to deal with future threats.'<sup>59</sup> In comparison, animals allowed their natural discharge through spontaneous movements *increased their resilience* in the face of future threats, with obvious relevance for the potential of TRE to build both psychological and *physiological* resilience amongst ADF personnel.

While current evidence suggests 'psychological debriefing' is at best ineffective, and at worst increases the effects of trauma, the reinstating of the body's natural ability to discharge and re-regulate arousal through intentional tremors without having to recall or talk about the event

gives rise to the concept of '*debriefing the body*' after a traumatic experience, and offers a significant perspective shift and adjunct to existing resilience approaches.

### **TRE optimises neurophysiological resilience *before* the experience of trauma**

In contrast to many arousal reduction techniques that tend to require the arousal response to be acutely activated in order for them to be relevant, required or effective, TRE is able to be used on a regular basis in order to reduce an individual's baseline state of stress and tension *before* entering acutely stressful or traumatic situations.

While most people tend to think of themselves as calm and relaxed unless they are experiencing acute symptoms of arousal, when the baseline state of the body is perceived neuro-physiologically according to unconscious resting levels of muscular tension, many people come to realise chronically tight and tense muscles are reflecting ongoing, low-level arousal states that are significantly affecting their overall physical and mental wellbeing, even though they had not been previously aware of it.

As TRE specifically focusses upon the physical release of this unconscious muscular tension, intentional tremors have the ability to reduce baseline states of stress and tension and maximise the likelihood of personnel maintaining a more calm, grounded and functional state during times of stress and trauma, as well as maintaining the higher cognitive skills required for the existing 'test and adjust' approaches.

### **TRE integrates into the existing culture of the ADF**

The role of neurogenic tremors in maximising not only psychological, but also physical benefits, allows TRE to be integrated into exercise and physical health programs seeking to maximise performance levels, assist physical recovery and build and maintain physical vitality and wellbeing. The routine and potentially service wide use of TRE in this physical context, divorced from its use as a 'psychological' intervention, also allows TRE to be normalised and destigmatised as part of the routine physical recovery processes of ADF units.



A key component of the existing BattleSMART program is that through regular training, education and practice, the skills taught 'become entrenched in both the individual and unit culture.'<sup>60</sup> It is therefore worth noting the neurogenic tremor mechanism is part of the inherent genetic make of the human organism itself, and rather than being something that needs to be trained into personnel, is 'thankfully, still very much alive in our bodies, simply waiting for us to reactivate it.'<sup>61</sup>

### **Neurogenic tremors can be cognitively over-ridden if required**

A common concern amongst military health professionals is that the regular activation of neurogenic tremors will result in uncontrollable tremors at inappropriate times, such as during combat. This concern is understandable, as to date they have been portrayed as only one of a number of possible reactions associated with heightened arousal.

As the tremors are neither part of the mobilisation response (as they don't create movement of the body towards or away from the threat) nor part of the immobilisation response (as they create detectable movement) they naturally occur as part of the recovery process *after the event* when it is safe to do so.

While the tremors are 'involuntary,' in that we are unable to consciously create their movements, they can be consciously stopped or over-ridden under the cognitive control of the cortex. This ability to 'self-regulate' the tremors is a key concept of the TRE training, using 'grounding processes' similar to many already taught in the existing SMART training program.

### **TRE integrates with the ADF's SMART delivery model**

As TRE can be easily learnt in large group settings and only requires minimal '*psycho-education*' in relation to the role and benefits of neurogenic tremors, TRE naturally integrates with the existing delivery model of the SMART resilience training program. TRE could be cost effectively added to modules including BattleSMART, LifeSMART and FamilySMART to assist across the military career and civilian life of both ADF personnel and their families.

As well as providing a practical stress management resource for the families of ADF personnel themselves, the integration of TRE into FamilySMART would also provide ADF families with a simple neurophysiological understanding of trauma that significantly normalises and destigmatises the wide range of psycho-emotional and behavioural reactions they may come to experience in their loved ones upon return to their civilian life.

## **6. TRE for Early Intervention and Arousal Regulation**

The Australian Centre for Post Traumatic Health's review of literature from 2002 to 2012 commissioned by the Department of Veterans Affairs, clearly recognised that hyper-arousal in the aftermath of trauma is 'specifically predictive of future post-traumatic symptoms.'<sup>62</sup>

In his 2010 article 'Resilience Training in the Australian Defence Force,' then National Co-ordinator of the Prevention and Resilience Team, Lieutenant Colonel Dr Andrew Cohn also reported 'elevated *physiological* arousal (ie heart and respiration rate) at the time of and immediately following a traumatic event was a significant positive indicator of the later development of posttraumatic stress disorder.'<sup>63</sup> [my emphasis]

In reflection of these findings, Lt. Col. Cohn explained 'In January 2009, the coping skills program was enhanced with the teaching of arousal reduction skills (ie controlled breathing and grounding) as the importance of arousal reduction during and immediately after a stressful event has been highlighted in recent empirical work.'<sup>64</sup>

Dr Cohn went on to outline 'the resilience training program, dubbed BattleSMART, is a cognitive behavioural based program that aims to develop both arousal reduction (ie the self management component) and adaptive cognitive coping strategies.'<sup>65</sup>

### **TRE compliments cognitive behavioural approaches to regulate arousal**

The US Defence Centres for Excellence for Psychological Health and mild Traumatic Brain Injury in their review of 13 mind body techniques to regulate the autonomic nervous system, importantly outline training to reduce arousal needs to provide a range of *both* 'top down,' (cognitively driven) as well as 'bottom up' (body driven) approaches, stating, 'as the 'neural processes are thought to be *physiological* and psychological, maintaining optimal levels of arousal would ideally include harnessing a combination of cortical interventions, *as well as* more sub-cortically targeted, or *body focused* interventions.'<sup>66</sup> [my emphasis]

The US Centres for Excellence review also noted providing personnel a number of techniques for regulating arousal may be more effective than one skill in isolation, in direct correlation with a foundational principle of the BattleSMART program aiming to give personnel ‘the broadest repertoire of coping strategies, as people with a broad range of coping strategies display greater adaptability and resilience in the face of adversity.’<sup>67</sup>

The ADF’s BattleSMART program has to date focussed primarily upon cognitive behavioural approaches that aim to over-ride or re-direct neurophysiological responses deemed ‘unhelpful’ or ‘inappropriate.’ Although the body is included in a number of techniques such as progressive muscle relaxation and controlled breathing, these techniques tend to incorporate the body as the *focus* of what remain ‘top down,’ cortical interventions that seek to cognitively direct the body.

It is important to recognise that in the case of mental health disorders such as PTSD and depression, it is precisely this inability to cognitively over-ride the neurophysiological responses of the body that is the foundation of a diagnosable disorder, and a limitation of existing cognitive behavioural treatments. A key clinical feature of PTSD is that the ‘symptoms experienced are perceived by the individual as *beyond their capacity to control*.’<sup>68</sup>

In comparison, TRE uses a cognitive behavioural technique (the exercises) to invoke a ‘*sub-cortical*’ reflex, (the tremors) thereby invoking the body’s own *self regulatory* processes and reinstating the *body itself* as a recovery resource, at the same time removing the stigma associated with neurogenic tremors and any misunderstanding of them as being inappropriate, not helpful or ‘out of control.’

TRE therefore, through the deliberate activation of intentional tremors in a safe and controlled way appears an obvious technique with the potential to dramatically expand the nature of the coping strategies taught to personnel for use in the immediate aftermath of trauma.

## Heightened arousal is internalised as part of the immobility response to trauma

In contrast to the primary focus upon arousal reduction in the ADF, the US Defence Centres for Excellence for Psychological Health and Traumatic Brain Injury, in their 2011 Mind Body Skills for Regulating the Autonomic Nervous System review, reported upon strategies to help ‘*regulate* and manage stress, emotions and arousal,’ critically recognising the need for ‘strategies for *lowering* anxiety when it is too high, or for *increasing arousal* when it is too low.’<sup>69</sup>

In psychological models of mental health, increased and decreased arousal are generally separated according to their dramatically different psycho-emotional and behavioural symptoms. When viewed on a neurophysiological continuum however, lowered arousal can also be understood as another part of the body’s natural reaction to trauma during the immobilisation, or ‘freeze and fold’ trauma response.

It is important to understand this immobility or ‘freeze’ response is an *even more highly activated state* of the nervous system that *internalises arousal* in order to suppress the movements of fight and flight. This creates the external appearance of ‘motionlessness,’ our body’s final instinctual defence against an overwhelming threat commonly referred to as ‘playing possum.’

During our freeze response, this desire for *movement*, created as part of the fight and flight response, is ‘frozen’ and *internalised* in the body by instinctual and unconscious muscular tension and contractions that *hold* the body in a state of immobility. This unconscious physical tension *must be released* in order to recover from trauma and return both the body and mind to a calm and relaxed state afterwards.

## **The body discharges *through* arousal states to recover from stress and trauma**

Once a traumatic experience is finished or the threat has reduced, the body seeks to restore itself to its baseline state by releasing these unconscious muscle contractions of the immobility response, naturally then beginning to shake and tremor as the *previously internalised movements* of our suppressed arousal response are released and discharged through spontaneous tremors.

If this period of heightened arousal during the release process is not allowed however, while potentially appearing 'under control' in terms of psychological or behavioural symptoms, and therefore undetectable to psychological screening tests, the trauma remains 'contained' and *held in the body* as chronic muscular tension that contributes to a range of ongoing physical and psychological symptoms with no apparent specific cause.

This neurophysiological perspective of trauma suggests approaches that focus heavily upon the need to *reduce* arousal may overlook the need for the body to at times 'down-regulate' *through* a period of heightened *physiological* arousal, (neurogenic tremors) in order to discharge and complete its unresolved responses to trauma.

## **The release of trauma does not require 'psychological' arousal or overwhelm**

While the release of unresolved trauma through intentional tremors *may at times* involve the experience of *neurophysiological arousal*, (increased heart rate, breathing, temperature and movement) there is no requirement for *psychological arousal* during TRE, such as overwhelming thoughts or emotions. Any experience of psychological overwhelm or distress during the experience of intentional tremors is a clear indicator the release of the trauma is not being integrated by the body or brain at that time.

This ability to self regulate the *neurophysiological discharge* of trauma without feeling psychologically distressed or overwhelmed is a foundational component of the TRE process,

with the vast majority of people able to *self-regulate* the process entirely, and only a small percentage of people requiring the initial assistance of another person to '*co-regulate*' the discharge until they are able to self regulate the process on their own.

### **The suppression of tremors may increase the likelihood of PTSD and depression**

The suppression of neurogenic tremors, whether consciously for fear of looking scared or out of control, or culturally through a lack of understanding about their the role in the discharge of unresolved trauma *through body-based arousal* states, may be inadvertently contributing to the increased prevalence of both PTSD *and depression* amongst ADF personnel.

Sergeant McQuilty Quirke provides an example of this process when he describes during the ADF's video on PTSD, Dents in the Soul, he wasn't diagnosed with PTSD until he was back in Australia, and had, until then, been 'fighting against it.'<sup>70</sup>

As arousal reduction is a primary focus of the ADF's early intervention and resilience training, and identified as a key indicator of likely PTSD and therefore the stigma also associated with it, it is foreseeable the vast majority of personnel would tend to identify the increased arousal associated with tremors as a negative reaction, and therefore choose to adjust, suppress or contain them according to their existing BattleSMART training.

As an inherent purpose of our 'freeze' or 'immobility' response is to make us unaware of the physical, emotional and psychological overwhelm associated with a traumatic experience, many personnel may also be unaware they have been 'traumatised' at the time of the event. This may potentially be reinforced if, without knowledge of the purpose and benefits of neurogenic tremors after trauma, they have been able to cognitively contain or suppress this natural discharge at the time.

While only speculative, this offers a neurophysiological explanation for a possibly overlooked contributing factor to not only the increased rates of depression among ADF personnel, but also both the common 'delayed onset' of PTSD<sup>71</sup> as well as the prevalence of post deployment and re-adjustment stress.

As the body seeks to down-regulate frozen, contained and unresolved trauma responses *through* arousal states once personnel have been removed from the environment of ongoing threat, it is often only upon return to civilian life and weeks, months and even years later the impacts of unresolved trauma experienced during deployment begin to become apparent.

### **Exercises that invoke intentional tremors have greater effect than exercise alone**

While aerobic exercise ‘may assist in the management of sleep disturbance and somatic symptoms that are common accompaniments of PTSD,’<sup>72</sup> as recommended as a good practice point in the Australian Centre for Post Traumatic Mental Health’s draft guidelines on the treatment of PTSD, the founder of TRE, Dr David Berceli’s original research found a notable difference between standard exercise and exercises that lead to the activation of unconscious and spontaneous movements of the body.

Dr Berceli’s study showed while subjects experienced lowered anxiety levels as a result of performing the TRE exercises alone, those subjects who performed the exercises and then allowed intentional tremors showed *additionally decreased* levels of anxiety in comparison to those who performed the exercises alone.

Dr Berceli states “Herein lies the distinction between aerobic exercise for stress reduction and exercises that activate tremors. Aerobic exercise is under the direct control of the cortex, the part of the brain that gives us the ability to consciously control the body. So when we perform aerobic exercise, we can only do so to the extent our mind allows. Also, we can only relax to the degree that our mind allows.”<sup>73</sup>

### **TRE meets all the requirements for an early intervention strategy in a military setting**

When looking at the requirements for early interventions suitable to address arousal *re-regulation* in the military setting, the TRE process meets all the requirements listed by Major Carolyn Deans and Major Kristi Heffernan in their 2010 article ‘Supporting Mental Health on Military Operations’<sup>74</sup>:



- TRE offers an immediate process to re-regulate arousal to reduce the likelihood of the compounding effects of further trauma
- TRE is able to be used immediately after trauma in operational settings both on the frontline or upon return to base
- TRE is a simple strategy that doesn't require cognitive input and can be performed by individuals or an entire unit while still engaging in potentially unrelated conversation
- TRE is extremely cost effective and doesn't require resource intensive approaches that can be difficult to achieve in the operational environment
- TRE has been already used in a military setting and fits the existing exercise and fitness based culture of the ADF
- TRE does not require any psychological debriefing and focuses upon the physical release of unresolved stress and tension
- TRE is able to be introduced and learnt during psycho-educational training in large groups but can be developed further during individual therapy if required
- TRE can be used throughout the entire tour of duty as well as upon return to civilian life

As an extension of the SMART resilience-training program, one of the most empowering aspects of TRE is it does not require the direct assistance or supervision of a health professional. This offers the potential for TRE to be integrated into the existing Keep Your Mates Safe - Peer Support program (KYMS-PS) through basic training for personnel in how to support each other through the process, helping build a sense of unit cohesion and resilience in the face of trauma.

More specific training is able to be provided to junior leaders embedded in units as part of the existing KYMS-leader model. This would enhance the reach and scope of TRE as a non-clinical early intervention technique for personnel exposed to extreme trauma or who may initially require more skilled assistance to co-regulate the discharge process.

### **There is existing evidence for the use of TRE in the military setting**

In recognition of its potential use in the military setting, the US Defence Centres for Excellence in Psychological Health and Traumatic Brain Injury included TRE as one of 13 mind body

techniques investigated in its 2011 review of Mind Body Skills to regulate the Autonomic Nervous System.

The review focused upon integrative practices because 'mind-body practices have been speculated to be more effective for helping achieve control over stress, arousal and emotions than more traditional talk based or task based treatments alone.'<sup>75</sup> The review included the evaluation of a range of breathing techniques, mindfulness, meditation, guided imagery, yoga and TRE, some of which are already a part of the ADF's existing SMART resilience training program.

All of the techniques investigated, including TRE had been included in the study as they met the following criteria<sup>76</sup>:

- had been previously used in a military setting
- could be easily incorporated into existing resilience programs or trainings
- could be learnt and taught by line leaders, peers and support agencies in a non-clinical context
- was popular and of interest within military and veteran hospital settings
- have potential for peer-to-peer based practice and dissemination<sup>77</sup>

The US Centres for Excellence review reported 'TRE holds appeal because individuals who practice the technique claim to feel immediate anxiety relief' and that TRE 'appears promising for it's ease of use, reducing hyper-arousal and reports of it's immediate benefits.'<sup>78</sup>

The outcome of this review, and in accordance with their recommendation that 'further research into the technique is merited,'<sup>79</sup> was that TRE was identified as one of the most promising 5 techniques subsequently incorporated into a study conducted by the Samuelli Institute involving 5000 US marines pre and post deployment to Iraq and Afghanistan. While currently the study results remain classified, it is envisioned the ADF would be able to gain access to the results of the study and the particular outcomes in relation to TRE.

In light of the ADF's commitment to 'innovation and research that improves our understanding of mental health and wellbeing in the ADF and the delivery of mental health care,'<sup>80</sup> TRE

appears an obvious topic for further investigation and substantial clinical trial as a cost effective and practical early intervention technique with the potential to destigmatise neurogenic tremors and their vital role in resilience building, trauma recovery and post trauma adaptation.

## **7. TRE for Stress Management, Physical Wellbeing and Improved Sleep**

While there is an obvious need to focus upon the impacts of trauma and the prevention of PTSD, TRE also offers the opportunity to reduce the significant effects of personal and *occupational stress* both during military service as well as upon return to civilian life.

### **There is a significant impact of non-traumatic stress upon ADF personnel**

The ADF's 2010 Mental Health Prevalence and Wellbeing Study alludes to the impact of stress on the workforce in relation to the 'significantly more partial days out of role due to psychological distress than the community,' stating 'this loss not only reduces the member's wellbeing but creates a significant drain on the capability and resources of the ADF.'<sup>81</sup>

While a large proportion of days lost are due to diagnosable mental health conditions, the report also states 'significantly, the remaining figure (38.2%) represents days out of role for non-specific symptomatology.' This finding 'highlights the importance of psychological distress in the absence of a diagnosis as a source of disability.'<sup>82</sup>

In his submission to this inquiry, Professor AC McFarlane, Head of the University of Adelaide Centre for Traumatic Stress Studies and previous Senior Adviser in Psychiatry to the Australian Defence Force, pointed to the significant impact of stress upon ADF personnel stating, 'the stress of serving at home during periods of conflict is significant' and that 'many individuals who had been the subject of traumatic stress in a non-deployed environment were not being identified or adequately treated.'<sup>83</sup>

Professor McFarlane also outlines the potential impact of stress on the ongoing physical and mental health of veterans with sub-clinical symptoms of depression and PTSD, stating 'this significant group of veterans not only have a significant risk of becoming clinically ill in the future, but are probably already suffering to some extent from the impact of their service.'

The Australian Centre for Post Traumatic Mental Health outline the impact of 'subclinical' symptoms on the long term wellbeing of military personnel, stating 'combat stress reactions do

not occur as a transient episode which rapidly subside, but rather can act as markers for continued vulnerability many years after war.’<sup>84</sup>

Professor McFarlane’s submission went on to recommended ‘the *development of intervention programs* to address subclinical symptoms in the post deployment environment should be an *important priority.*’<sup>85</sup> [my emphasis]

### **TRE releases the physical tension associated with stress**

The neurophysiological responses to stress are almost exactly the same as they are for trauma, differing only by degree and both occurring regardless of whether the stress is physical, emotional or psychological in nature.

An often overlooked, yet significant concept in the prevention and management of non-traumatic stress is that the underlying neurophysiological states of ‘sub-clinical’ symptoms are expressed in the body as chronic muscular tension, with these unconscious tension patterns reflecting ongoing low levels of arousal of the autonomic nervous system.

Dr David Berceci, TRE founder explains “it turns out that post-traumatic stress disorder symptoms are the result of the same activation that occurs during stressful events. In other words, post-traumatic stress symptoms are created by the identical stress hormones releasing in normal stressful moments,’<sup>86</sup> therefore providing the obvious opportunity for TRE to release the physical effects of stress through the very same tremor mechanism used in response to more extreme forms of trauma.

### **TRE creates deeper and more restful sleep**

Another significant area that may potentially benefit from the introduction of TRE is in relation to sleep, where the ADF currently uses ‘cognitive or behavioural treatments (such as stress management and relaxation strategies) medication or a combination of both these therapies.’<sup>87</sup>

As with a few weeks practice, most personnel are able to invoke intentional tremors almost immediately upon lying down in bed, improved sleep is one of the primary benefits reported

by military personnel using TRE, and critical for optimal performance and unit morale in the military setting.

While regular aerobic exercise is recognised by the Australian Centre for Post Traumatic Mental Health and recommended for its potential to 'assist in the management of sleep disturbances and somatic symptoms that are common accompaniments of PTSD',<sup>88</sup> this submission has previously outlined the intentional tremors induced by the TRE exercises has a potentially greater affect than the performance of exercises alone.

The addition of TRE to existing cognitive behavioural approaches therefore offers a significant opportunity to expand the nature of the techniques available to personnel to reduce the effects of occupational stress and sleep difficulties upon their general health and wellbeing, both during military service and upon their return to civilian life.

## **8. TRE for the clinical treatment of PTSD and Depression**

This submission has primarily focused upon the potential for TRE to be used as a cost effective, service wide self-care process to build resilience, and as an early intervention technique to minimise stress and maximise recovery and post trauma adaptation. In addition, there is significant opportunity for intentional tremors to be used in a clinical setting to compliment existing cognitive behavioural techniques and the treatment of mental health issues such as anxiety, depression and PTSD.

### **TRE utilises the body itself as a treatment resource**

While significant advances have been made amongst trauma therapies to include the body in treatment, many existing approaches tend to incorporate the body as *the focus* of the technique, and generally remain a top down, cognitive based interventions.

In comparison, the TRE process uses a cognitive behavioural intervention (the exercises) to invoke intentional tremors that are then below the level of cognitive control, (*a sub-cortical reflex.*) TRE recruits the body itself *as the treatment resource*, by deliberately activating intentional tremors and invoking the body's own innate *self-regulatory processes* to discharge and release the unresolved effects of trauma.

In his submission to this inquiry, Professor AC McFarlane, past president of both the International and Australasian Society for Traumatic Stress Studies states, 'there is now a substantial body of evidence highlighting how psychiatric disorders arising out of combat exposure are caused by the impact of traumatic stress on *neurobiological systems*,'<sup>89</sup> [my emphasis]

Professor McFarlane also notes 'there are important interactions between the physical mechanism of injury and the impact of trauma exposure on stress systems,'<sup>90</sup> one of the key reasons the body must not only be incorporated into treatment for the benefit of 'psychological outcomes', but for the recovery from trauma of the body itself. TRE founder Dr David Berceci

states, 'the body has different requirements for healing unconscious tension directly related to the experience the body went through.'<sup>91</sup>

As neurogenic tremors *re-regulate* arousal and help return both the body and *the brain* to a more calm relaxed state, the use of TRE also has the potential to enhance the effects of existing treatment methods by allowing greater access to the 'higher cognitive functions' of the brain that are critical for the effective use of cognitive behavioural techniques.

### **Movement is a recognised concept in the treatment of trauma**

The US Defence Centres for Excellence recognises the potential of incorporating the body into treatment approaches to PTSD and depression, stating that while 'exposure based interventions and psychopharmacological approaches for regulating anxiety and emotions have predominated, various mind body approaches have shown promise to positively affect a variety of disorders, including anxiety, depression, headaches, chronic pain and insomnia.'<sup>92</sup>

Recent developments in the use of Eye Movement Desensitisation Reprocessing (EMDR) offers potential parallels as to the potential relevance of TRE, as EMDR combines a number of existing cognitive behavioural approaches with the foundational component of ongoing repetitive eye movements during the treatment session.

While the Australian Centre for Post Traumatic Mental Health recognises EMDR as one of a number of approaches with the most empirical evidence for the treatment of PTSD, it also states 'the more novel components of EMDR however, are highlighted as being limited in theoretical and empirical support.'<sup>93</sup>

This novel component, consisting primarily of the repetitive side-to-side movements of the eyes during EMDR, are similar to eye movements that often occur spontaneously following trauma and not dissimilar to the repetitive, side-to-side body movements often experienced during intentional tremors.

Alan Fogel, Professor of Psychology at the University of Utah refers to research involving the role of spontaneous movements he terms 'twitching,' that naturally occurs both in utero and in



the recovery phase of physical injuries. Fogel states that ‘active sleep, which includes rapid eye movements and occasional twitches, is responsible for ‘physiological restoration’ and integration across neural circuits.’<sup>94</sup>

Given the Australian Centre for Post Traumatic Mental health recommends ‘future research should focus on further our understanding of what mechanisms are involved in the development and maintenance and by extension, what mechanisms need to be targeted in treatment,’<sup>95</sup> and the ADF has a strategic objective for a ‘rigorous research program that is priority driven and addresses *key knowledge gaps*,’<sup>96</sup> it would appear TRE and the use of intentional tremors in the treatment of PTSD and depression would be a suitable candidate for further investigation, research and substantial clinical trial.

## **9. TRE for the treatment of Physical Injuries**

While most mainstream health professionals tend to be avoidant of using terms such as 'energy' or 'vibration' in relation to their work, it is worth noting nearly every piece of electrotherapy equipment used in the treatment of injuries by Physiotherapists involves some kind of vibrational stimulation of the body.

The difference in effects between the range of machines used is primarily determined by the different frequencies at which they stimulate the body, such as low frequency TENS for pain relief, medium frequency interferential for reducing both pain and swelling, high frequency ultrasound for tissue healing and low frequency body flow for smooth muscle activation to increase circulation, reduce swelling and enhance sports recovery.

The use of vibrational platforms to enhance sports performance is also becoming recognised within physical health disciplines, with various studies suggesting potential benefits including increased strength and muscle tone, increased relaxation, reduction in delayed onset muscle soreness as well as changes in bone density in post-menopausal women.<sup>97</sup>

Dr David Berceci, in his book 'The Revolutionary Trauma Release Process' refers to studies showing 'mechanical stimulation of the neuromuscular system has positive effects on athletic performance,' and that 'biomechanical stimulation is being used to correct restricted body mobility, range of motion, coordinate musculoskeletal and nervous systems and to increase the rate of healing injuries.'<sup>98</sup>

As during the TRE process, the body itself regularly varies the size, frequency, pattern and location of the neurogenic tremors, it is not unreasonable to suggest these spontaneous movements are not just a vital component of the recovery from psychological trauma, but potentially an inherent mechanism to assist recovery from physical injury as well.

## **TRE can assist the treatment of musculo-skeletal injury**

One of the most common findings associated with a range of musculo-skeletal conditions (including injuries caused by physical trauma) is chronic muscular tension accompanied by significant loss of awareness of the injured part of the body.

Alan Fogel, Professor of Psychology at the University of Utah refers to the potential role of spontaneous movements in the recovery from physical injuries stating, 'twitching seems to be an essential mechanism to start the development of neuro-motor links that introduce one body part to another to integrate the body schema' as part of '*physiological restoration*.'<sup>99</sup> [my emphasis]

In clinical experience as a physiotherapist, primarily working in the fields of Pilates and core stability training, the use of intentional tremors has significantly improved the effects of these rehabilitation programs through both the release of unconscious tension patterns as well as increased body awareness of the areas involved, both key principles of the effective neuro-rehabilitation of musculo-skeletal injuries.

In clinical practice, it is also common for the body to induce a fine, fast tremor in the precise location of an acute injury, such as a sprained ankle, or for the tremors to activate specifically in stiff and tense areas, resulting in reduced pain and significantly enhanced movement, flexibility and sensation at the completion of the TRE session.

## **TRE can be used to enhance sports recovery and reduce training soreness**

The use of TRE as a sports recovery tool has been previously outlined in this submission, with anecdotal reports in a reduction of training soreness and significantly reduced recovery times appearing consistent with results achieved through machines using low frequency vibrational stimulation such as BodyFlow.<sup>TM</sup>

While the precise neurophysiological mechanisms by which neurogenic tremors affect their changes, or how the body determines how and where to activate the tremors has not yet been studied, it appears through clinical practice that just as the body automatically and

unconsciously creates neuromuscular tension in response to injuries, it also has the innate ability to unwind and release these tension patterns as well, indicating further research into TRE and the use of intentional tremors in physical rehabilitation is also warranted.

## **10. Implementing TRE in the ADF**

The ADF is to be fully commended on the implementation of extensive programs to improve the resilience and mental health of their personnel, and its recognition as a world leader in this area. The Chief of the Defence Force, General David Hurley however, acknowledges while 'mental health programs are working, the ADF would always strive to do better.'

### **Further development of innovative mental health programs is an ADF priority**

While the LASER-Resilience program is an example of the ADF's commitment to the evaluation of innovative programs, recommendation 49 of the Dunt review states 'The ADF's strong commitment to development and evaluation of innovative programs *should continue*,' adding '*new programs* for members returning from deployment to forward bases with adjustment problems and traumatic stress symptoms should be a *high priority* for development and evaluation.'<sup>100</sup> [my emphasis]

While there remains 'no evidence of primary prevention interventions (that target the whole population of military personnel) to prevent combat related PTSD,'<sup>101</sup> the development and investment in the BattleSMART resilience program is a clear example the ADF are prepared to invest heavily in programs that have the potential to assist the wellbeing of their personnel even if they are *not yet* evidence based.

### **TRE has the potential to enhance the ADF's SMART resilience training program**

This submission proposes the existing SMART resilience training program, introduced largely in its current format in 2009, may be significantly enhanced through the addition of TRE in order to provide a more complete biopsychosocial approach to resilience training, early intervention and trauma recovery.

In their 2012 Military Medicine article, 'Prevention and Care of Combat-Related PTSD; Directions for Future Explorations,' Riggs and Sermanian from the US Centre for Deployment Psychology outlined 'advances in neurosciences, our understanding of memory, and

neurobiological mechanisms related to memory, offer possible avenues for a *shift* in treatment of PTSD. New treatments may combine biological, pharmacological or neurological interventions into existing treatments, or may represent completely new approaches not yet conceived.<sup>102</sup> [my emphasis]

This submission proposes TRE as a clear example of such an innovative 'neurobiological' approach that could be cost effectively investigated, developed and evaluated, as it offers significant potential to address a key knowledge gap in relation to the vital role of neurogenic tremors in trauma prevention and recovery, with the added potential to significantly reduce mental health stigma among ADF personnel.

### **TRE is a new approach to invoke an old resource in the human body**

It is worth noting while the TRE process appears 'innovative' to contemporary psychological models, tremors, shaking and spontaneous movement have long been part of trauma recovery in many traditional cultures around the world. While the TRE process is an innovative method to invoke these tremors in a safe and controlled way, the neurogenic tremor mechanism itself however, has evolved as part of the genetic make up of the human organism and is, from an evolutionary perspective, as old as we are.

While only introduced to Australia in 2010, TRE has been successfully taught by Dr David Berceli and many others around the world for more than 15 years, with ongoing evaluation and adjustments based on clinical practice in a range of therapeutic and general community settings. TRE has also been successfully introduced to other military personnel and first responders in a range of countries including the US, Canada, Brazil, Norway and Sweden.

As previously outlined, there is existing evidence for the potential benefit of TRE in the military setting as identified by the US Defence Centres for Excellence in Psychological Health and Traumatic Brain Injury,<sup>103</sup> and demonstrated by TRE's subsequent inclusion in the Samueli Institute trial involving 5000 US marines pre and post deployment.

## **TRE fits the existing programs and culture of the ADF**

While there are a number of potential areas for TRE to be implemented, the primary focus of this submission is that TRE provides an extremely cost effective opportunity to support and significantly enhance the existing SMART resilience program, by providing a practical, body based process that can be used at call or on a regular basis in any setting to build resilience, minimise stress and self-regulate arousal in the aftermath of trauma.

AS TRE is able to be taught in large groups in a 2-3 hour session that includes the background psycho-education' required, (the Samueli Institute study taught 50 marines at a time) the process would appear to integrate efficiently with the existing SMART delivery model and could easily be added as an additional module.

As TRE is easily added to physical fitness programs as a relaxation technique, a core stability exercise or a sports recovery process, its regular use in the exercise and fitness setting divorced from its use as a 'psychological technique,' also ensures it is entrenched in the unit culture and significantly reduces the likely-hood for it to be stigmatised as only being for personnel who 'need help' or are struggling to cope with the ongoing demands of their service.

As intentional tremors can be activated in any setting, on the ground or sitting, in bed alone or in a large group while still engaging with other personnel, there is significant potential for TRE to become part of the standard recovery processes of operational units and routinely used during deployment to maximise both the physical and mental health of personnel through one simple, practical and cost effective technique.

## **TRE can facilitate peer support, unit morale and non-clinical interventions after trauma**

In order to further empower both individuals and units in their use of TRE as an early intervention strategy, there is the potential to provide additional basic training as part of the existing Keep Your Mates Safe – Peer Support program, such that personnel are able to support colleagues having difficulty re-regulating their arousal after a traumatic event and increasing a sense of unit morale, solidarity and resilience in the face of trauma.

There is also the opportunity to provide advanced TRE training to junior leaders embedded in units as part of the existing Keep Your Mates Safe – Leader program. Additional skills training of junior leaders would maximise the reach and benefits of TRE as a non-clinical early intervention strategy for personnel exposed to extreme trauma, or for those identified as most likely to develop PTSD in a way that is both resource efficient and easy to achieve in an operational environment.<sup>104</sup>

### **There is a substantial cost benefit to the prevention of PTSD and depression**

The ADF budget for the delivery of the existing resilience training programs was estimated at \$13 million in 2010-11, and \$16.6 million was allocated in the same year to improve mental health services through ‘specialist workforce, equipment and facility upgrades.’<sup>105</sup> There is currently no available data on either the individual or collective health costs to the ADF for an individual diagnosed with PTSD or depression, nor the costs of group programs currently used to treat them.

In the US, the Congressional Budget Office (CBO) estimated Veterans Health Administration, (that provides health care services for ailing veterans) spent *more than half of its funding* between 2004 and 2009 on post 9/11 troops with PTSD and/or mild Traumatic Brain Injury. (mTBI)<sup>106</sup>

The average additional cost of *health care treatment alone* for an individual diagnosed with PTSD and/or mTBI in the *first year*, was estimated by the CBO at between US\$5000-10,000, and about four to six times greater than for patients receiving care but without a diagnosis of PTSD and/or mTBI. The CBO also reported ‘nearly all the troops affected by both PTSD and Traumatic Brain Injury remain under the VA’s care after *four years*.’<sup>107</sup>

Given these figures, as TRE can be introduced to large groups of up to 50 personnel at a time in a 2-3 hour training session at an approximate cost of *\$50 per individual*, TRE would only need to prevent the onset of PTSD or depression in *less than 1% of personnel taught* in order to be significantly cost effective in comparison with current *treatment costs alone*.



As there is no data available for the ADF or Department of Veterans Affairs in relation to the total costs that includes treatment and additional support costs, such as Incapacity Payments and Special Rate Disability Pensions, figures from the Australian Government's Rehabilitation and Compensation Commission provide a rough guideline as to the potential financial impact of PTSD and depression.

While not specific to the military setting, the 'Compendium of OHS and Workers Compensation Statistics 2005-2009,' estimated the average cost of an individual compensation claim due to mental stress in the general community was approximately \$140,000.<sup>108</sup> As TRE can be introduced in a 2-3 hour workshop for approximately \$50 per person, even at more conservative estimates, this figure suggests TRE would only need to prevent PTSD or depression in 1 out of every 2000 personnel taught in order to be substantially cost effective.

While the costs of PTSD and depression based upon direct spending are obviously substantial, it is also worth noting the real costs of mental health issues for both the individual and the general community are far greater, and include the costs of suicide, reduced physical health, increased unhealthy behaviours, substance abuse, unemployment, reduce work performance, homelessness, marital and relationship strain, domestic violence and poor parent – child relationships.

### **A clinical trial of TRE would be time, resource and cost efficient**

TRE provides an ideal opportunity for the ADF to run an extremely cost, time and resource efficient clinical trial, by the addition of TRE training to a limited number of units to create a subsample of the existing research programs such as LASER-R. This would allow for a direct comparison between mental health outcomes for personnel who have undertaken TRE training in addition to the SMART modules, in comparison to those who have done the SMART training alone.

Given the potential to address a key knowledge gap in relation to the role of neurogenic tremors in trauma recovery, the potential to significantly enhance service wide resilience and early intervention programs, and the potential to destigmatise trauma recovery and mental health as a whole, it is requested this inquiry make a clear recommendation for the ADF to

instigate a collaborative clinical trial on a large enough scale to accurately measure the effects of TRE and the deliberate use of intentional tremors upon the physical and mental health of their personnel.

## **About Richmond Heath**

Richmond Heath is a registered Physiotherapist, Level 3 trainer and TRE National Co-ordinator who introduced TRE to Australia in 2010 and New Zealand in 2011. Richmond also holds an Advanced Diploma of Aboriginal Studies, is a qualified Bowen Therapist, has specialised in Clinical Pilates and has a diverse background of experience both in public and private health sectors, including youth, community, mental and indigenous health, as well as youth suicide prevention.

He has presented public TRE workshops and professional training in a broad range of settings including the general community, hospitals and community health centres, as well providing specialist workshops for survivors of the 2009 bushfires in Victoria, the 2011 floods in QLD and 2011 earthquake in Christchurch, New Zealand.

He has previous experience in the pioneering of innovate programs that incorporate the role of the body in mental health, including the introduction of a mental health rotation for physiotherapy students in London during his time in the UK.

While working with the award winning, internet-based, youth suicide prevention service [www.reachout.com.au](http://www.reachout.com.au), he initiated and developed the Big RORRT, (Reach Out! Rural and Regional Tour,) delivering presentations to more than 30,000 young people in 4 states and introducing many parts of regional Australia to the potential of the internet as a positive mental health tool for the first time.

Richmond is recognised amongst the global TRE community for his ability to convey complex information, such as the neurophysiological background of TRE, in a clear and simple manner in order to create the required context and understanding to learn TRE for either personal use or as part of professional training.

His physiotherapist background provides a vital link to the role of the body and its neurophysiological processes in mental health in general, as well as its specific role in stress and trauma prevention and recovery through the deliberate use of intentional tremors.

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