Further research into the use of Putative cerebellum Exercises to help Manage and Relieve Symptoms of PTSD.

Post Traumatic Stress Disorder occurs after traumatic events exposure, although not everyone exposed will develop PTSD. It is a debilitating condition that will affect 5- 10% of the general population at some point in their lives[1].

PTSD is characterised by symptoms of re-experiencing such as intrusive memories and dreams; avoidance including avoiding thoughts, feelings and places associated with the traumatic event; numbing or feeling detached from others; and hyperousal including poor sleep, irritability and hypervigilance[2].

There have been many studies, since the work published by Schmahmann and Sherman in 1998[3], showing the growing awareness that the cerebellum plays a role in higher cognitive functions such as sensory processing, attention, verbal working memory and emotion. There is now the suggestion that the cerebellum plays a role in anxiety disorders[4] and PTSD. Recent studies have also shown that cerebellar fluid reduction is associated with mood, anxiety and PTSD symptoms[5] and that there is a possible role of the cerebellum in the vulnerability to experience negative affect.[6]

In 2005 psychiatrist, Dr Greg Wilkins, undertook a study of fourteen of his patients on 'The Use of Putative Cerebellum Exercises to Control and Relieve Symptoms of PTSD'[7]. He made reference to Professor Alexander McFarlane[8], who discussed PTSD as sharing some of the cardinal features of Attention Deficit Hyperactivity Disorder (ADHD). Dr Wilkins stated that several programs[9] reported improvement in cognitive function of patients with ADHD using physical exercise techniques believed to stimulate the cerebellum.

Additional studies by researchers in 2004[10] and 2008[11], involved participants learning to juggle three balls. These studies both showed an increase in grey matter contradicting the traditionally held view that the anatomical structure of the brain does not alter, except for changes in morphology caused by ageing or pathological conditions. Their findings indicate that learning-induced cortical plasticity is also reflected at a structural level.

The second study, in 2008, showed that changes in the occipital area were already detectable after one week of the exercise. Most importantly this latter study suggested that '*qualitative change (i.e. learning of a new task) is more critical for the brain to change its structure than continued training of an already-learned task'*.

In his study Dr Wilkins patients undertook a putative cerebellar exercise, along with conventional treatment for PTSD. The result was that all 14 patients confirmed a benefit in the relief of their PTSD symptoms, this was confirmed in the reduction of their PCL-C scores from pre exercise to post exercise.

I was one of the 14 patients that took part in this study. Due to the benefits seen overall, as well as my own significant improvements in the reduction of PTSD symptoms after three weeks, I continued the study.

The Study Participants

Study participants were sourced via Facebook pages including my own Facebook page, 'Under Siege by Belinda Neil', various Facebook groups focussed on former police and emergency groups, and PTSD awareness groups. The Western Australia Police Union was also sourced due to the lack of help for and awareness of PTSD sufferers. A copy of the initial study request is attached.

Whilst the study was initially to take place over a three week period from March 1, there were a number of requests from various persons, and information regarding the study not being available to some until after this date, so the study continued with some participants electing to continue the exercises for up to nine weeks.

20 participants took part in the study. Whilst the majority of applicants were diagnosed with PTSD, one of these participants was diagnosed with PTSD Amnesia. Participants included former and current serving police officers, former and current serving fire fighters, and civilians.

The Exercise

Study participants were asked to undergo an exercise designed to stimulate their cerebellum. The exercise consisted of standing on one leg with their eyes closed for five minutes twice daily. Participants were told to keep their second foot approximately one inch off the ground so that if they became unstable or felt is if they would fall, they could use this foot to aid balance once again. A video, available via youtube link - https://www.youtube.com/watch?v=KbTa9SUqrCU, was sent to each participant to visually demonstrate the exercise. Weekly follow up was conducted via email, facebook messaging, or phone text.

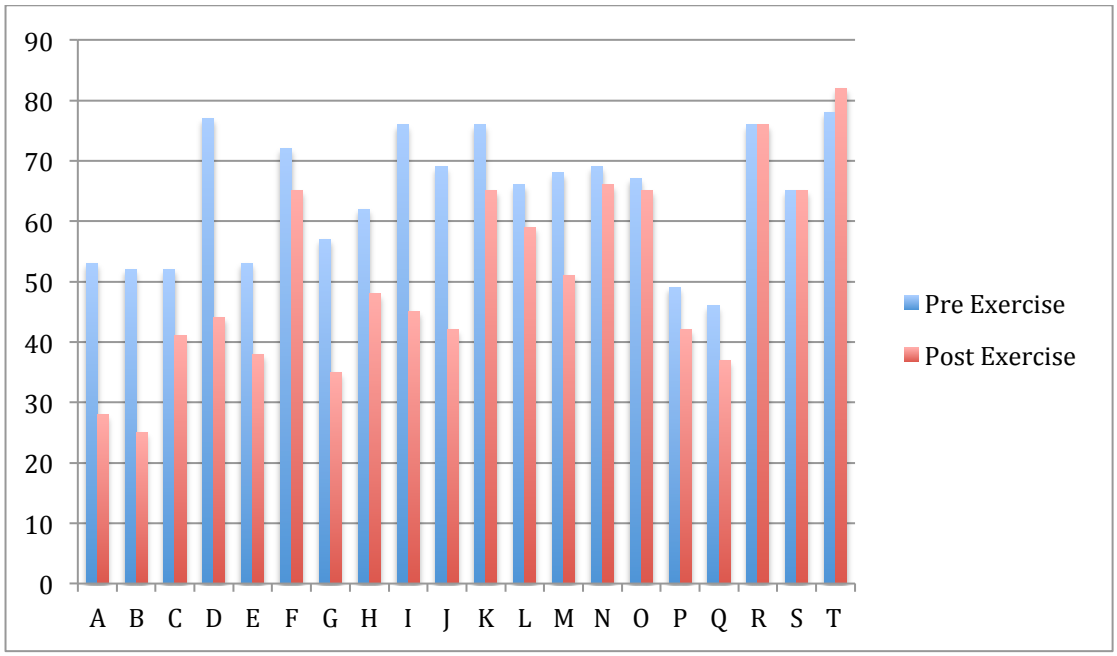
Prior to the exercise commencing, participants were emailed the PCL–C PTSD Checklist[12] which was filled in and emailed back. At the conclusion of the study the PCL-C form was once again emailed to each of the participants, who filled it out and returned it.

Results

I have included the results of all 20 participants. 85% of participants reduced their PTSD scores and symptoms. The results have varying degrees of improvement as shown:
Participants A to M showed a significant drop in their PTSD scores and symptoms.
Participants from N to Q openly stated they were only performing the exercise intermittently, instead of twice daily and still show a drop in scores indicating improvement in symptoms.
Participants R and S, who show no change in their symptoms, advised that whilst they felt the exercise could benefit they were lacking the motivation to continue or kept forgetting to do the exercises due to their symptoms of PTSD and/or other stressful events occurring in their life at the time.
Participant T increased his score by 4. He felt his 'trajectory down' was too well advanced for most treatments and was awaiting admission to a mental health facility. He is currently undergoing ECT.

For those participants who carried out the exercise twice daily, and even intermittently, the results clearly show a benefit in the relief of symptoms of PTSD as can be seen by the PCL-C scores.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Pre	53	52	52	77	53	72	57	62	76	69	76	66	68	69	67	49	46	76	65	78
Post	28	25	41	44	38	65	35	48	45	42	65	59	51	66	65	42	37	76	65	82



Further to the PCL-C scores, the participants themselves noted five main areas of improvement. They are as follows;

1. **Sleep**– 70% commented on their improved sleep. Comments include;
   'Sleep seems better. Night sweats not occurring as frequently. Having dreams but no nightmares or flashbacks'
   'Sleeping a little better – still dreaming but no nightmares'
   'Sleeping more soundly at night. Sleep is much deeper and quality has improved.'
   'My sleep has improved.'
   'Exercise appears to be helping with more relaxation in being able to get to sleep.'
   'Better sleep for longer periods. Quality of sleep improved which is invaluable.'
   'I'm feeling somewhat settled, even gone off the sleeping medication.'
   'Sleeping longer at night without interruption.'
   'Helped my sleep.'

2. **Irritability and attitude** – 45% commented on this;

   'Behaviour/attitude towards children's misbehaviour is significantly better. More patient & little things remain little things.'

   'Less irritable and a bit more patient – especially with kids'

   'Anger is better and able to articulate displeasure rather than snap and swear. Mood is lighter.'

   'More relaxed in demeanour and general attitude. Mood varies but its okay. Time to time gets flustered but not as bad as it used to be.'

   'Less irritable.'

   'Ups and downs not as dramatic. Am better dealing with them now so still positive.'

   'Learning to notice when starting to lose composure.'

   'Moods stabilising.'

3. **Noticing a positive change in themselves** – 70% volunteered this information;

   'I am feeling really good actually.'

   'Moods are better.'

   'Generally a little more relaxed.'

   'Seeing positive in things rather than negative or ambivalence.'

   'After 5 minutes (doing the exercise) feel relaxed and calmer. More motivated.'

   'Helped reduce the fog feeling in my head.'

   'Motivation is greater and feeling more active. Things are more clear and it has settled me somewhat. A lot more alert and getting things done around the home.'

   'Not so depressed'

   'Feeling a lot more relaxed, calmer, happier, less irritable etc.'

   'May be helping set positive goals about travelling.'

   'Life is a bit more settled.'

4. **Memory**

   'Head is clearer, anxiety lower and concentration and memory have returned somewhat. Mind is clearer and sharper. Memory has improved greatly.'

   'Memory has slightly improved.'

Comment from PTSD Amnesia participant – 'memory is still coming back. 'Strong feelings of what it was like during captivity, escape and re-abduction have appeared. Getting better at remembering the day to day things I would normally forget.'

5. **Flashbacks**

   'I think its reducing symptoms of flashbacks – less tears and more insight so that's good.'

   'Pain of memories still there but not as severe, even though doesn't erase it.'

   PTSD Amnesia participant - 'Retaining more of my dream memory when waking.'

In addition various family members made the following observations regarding their loved one:

'My wife was surprised I agreed to go to my grandsons surprise birthday as this would normally cause (me) anxiety'

'My wife says I appear a little less anxious and cranky.'

'My husband noticed I have been more motivated in getting things done around here and more regular meals/routine etc.'

'Family say (my) moods have lessened to an extent.'

It should be noted that during the course of the study some participants were also undertaking a variety of therapies, including cognitive behaviour, medication, and physical exercise. The only common factor for all 20 participants was the Putative Cerebellum Exercises.

Limitations of the study

I have previously indicated where the participants were sourced. Whilst all participants were aware of my book 'Under Siege' which includes my record of participating in Dr Wilkins 2005 study, not all participants had read or were aware of my book. In addition, all participants self nominated and indicated a desire to reduce their PTSD symptoms after other methods did not seem to work for them. No control group was used for this study.

All contact with participants was online, either email, Facebook messaging, or phone texting. Whilst participants were able to see a demonstration of the first exercise, I was not physically able to confirm if the participants were carrying out the exercise as instructed or complying twice daily.

Finally, the PCL-C was the measuring instrument used. This is a very useful tool for pre and post treatment measurements but it does have its limitations[13].

Discussion

One of the goals of therapy is to reduce symptoms and provide a better quality of life for the patient or person suffering PTSD. At the first onset of somebody being diagnosed with PTSD the normal course of action is Cognitive Behaviour Therapy[1415] or Exposure Therapy[161718], and/or medication[19]. It should be noted here that the Australian Guidelines for the Treatment of Acute Stress Disorder & Posttraumatic Stress Disorder state, '*For adults who develop PTSD, the best approach to treatment is trauma-focussed cognitive behavioural therapy (TF-CBT) or eye movement desensitisation reprocessing (EMDR). These psychological treatments involve confronting the memory of the traumatic event and coming to terms with the experience.'* [20] In reference to when medication should be used these guidelines are very clear, '*Medication should not be used in preference to trauma-focussed therapy but may be considered when the person is not ready or willing to engage in, or has no access to, trauma-focussed therapy, they have additional mental health problems such as depression, or they have not benefited from trauma-focussed therapy.'*

Many patients find talking about their PTSD can worsen symptoms of or trigger PTSD[21], in fact exposure based treatments can feel gruelling for both patients and therapists[22]. To date the results of two trials (this study and Dr Greg Wilkins' study in 2005[23]) into the putative cerebellum exercises clearly show an overall improvement in patients and participants overall. For those who comply with the exercises (five minutes, twice daily) there is a very high likelihood that their PTSD symptoms will reduce and quality of life improve.

It is further stated that the use of putative cerebellum exercises may assist the patient in early stages of treatment, not only with their concentration, but more importantly allowing them to

participate in CBT or Exposure therapy rather than dissociating. It should be made very clear that the exercises are not a substitute for the currently recommended treatments for PTSD but should be used as an **adjunct** to these treatments for the best possible outcome for the patient.

In addition, there is now sufficient evidence from both trials to justify further examination of the putative cerebellum exercises as a means of managing PTSD symptoms. Continued study could include patients that undertake the putative cerebellum exercises alongside their normal treatment and a control group of those that only continue with normal treatment. It would be an interesting comparison over a passage of time to see if there is significant improvement between those who do the exercises to those that don't. My study was a cross section analysis of a limited population and yet still there was significant change.

There is a **clear benefit** in undertaking the putative cerebellum exercises. The numbers are sufficient to warrant closer examination of this particular strategy of managing PTSD symptoms.

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Putative Cerebellum Exercises - My Interest Study

I'm a former NSW police officer (18 years SERVICE) who medically retired with PTSD.

Those who have read my book 'Under Siege' know that the cerebellum exercises were the turning point in my PTSD symptoms improving. I have had a lot of questions from people regarding the cerebellum exercises, and how to do them properly so I have decided to run a simple study over 3 weeks in March. (You don't need to read my book to take part).

The aim of this study is to see if other PTSD sufferers benefit from doing these exercises for three weeks.

To do this

1. I will show you how to do the exercises properly, I would ask that you perform the exercise for 5 minutes twice daily over the three week period.

(I will post and email a video link - where I show you and explain the exercise.)

2. I will ask that you complete a simple set of 17 questions before you commence and again after you finish the 3 week period of doing the exercises. (The answers to the set questions will indicate the severity of PTSD symptoms at the start of the trial and at the completion of the trial.)

The results of the study, I will be passing onto an expert in the field for interpretation.

Besides posting the video link, I will also post a FAQ page and am happy to answer any questions either via private message, email, or via my Under Siege Facebook page so if you require any further information please don't hesitate to contact me.

Whilst the study is specifically for those with PTSD anyone can try the exercise, view the video and ask advice.

For those with PTSD, who are interested in taking part, please email me now at

belinda@belindaneil.com.au

I will send you the questionnaire to complete and email back to me.

Any questions don't hesitate to ask. Please pass on to anyone you think may benefit from taking part. Belinda ☺ xo