Spring 4-29-2021

# Effect of neurosteroid levels, genetic linkages, and pre-deployment virtualreality resilience training on PTSD severity

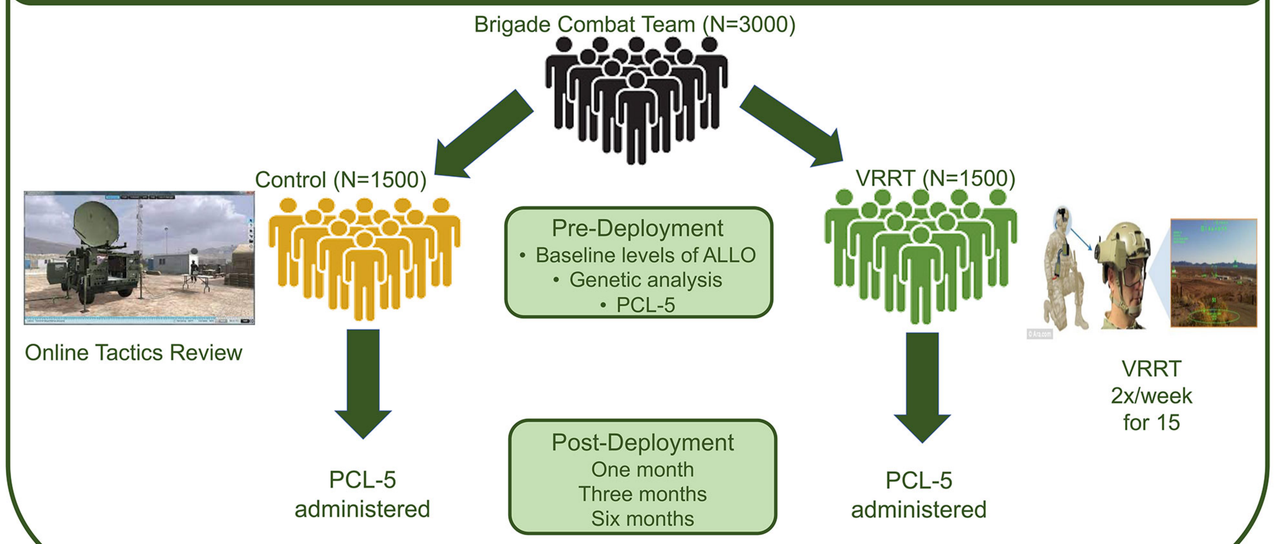
Kathryn Fama
*Providence College*

# Effect of neurosteroid levels, genetic linkages, and pre-deployment virtual-reality resilience training on PTSD severity

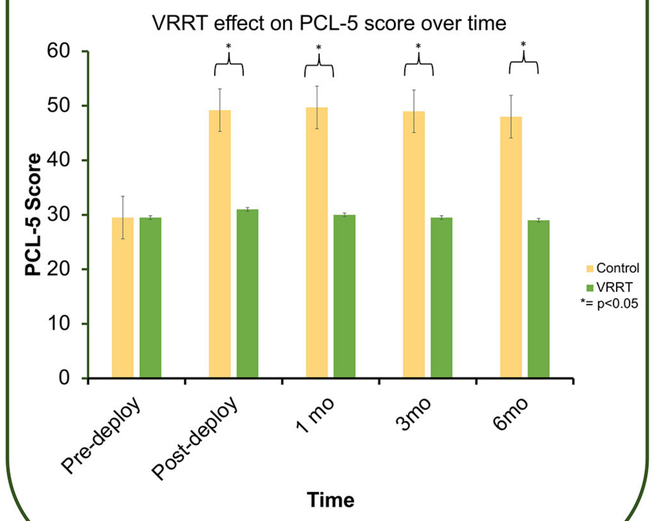
Kat Fama

Post-traumatic Stress Disorder (PTSD) is more prevalent among soldiers than civilians, with 11-20% of soldiers diagnosed with PTSD each year compared to 3.5% of civilians (US Department of Veterans Affairs, 2018). Current military programs focus on treating PTSD after combat deployment instead of preventing it. Biological factors, such as blood plasma levels of neurosteroids allopregnanolone and pregnanolone (together known as ALLO) are associated with decreased vulnerability to PTSD. Conversely, the presence of SNP rs717947 indicate an increased vulnerability to PTSD. Psychological interventions such as virtual-reality based resilience training (VRRT) has been shown to effectively mitigate PTSD symptom severity. **The aim of this project is to examine these biological factors and psychological interventions to identify effective PTSD prevention methods**.

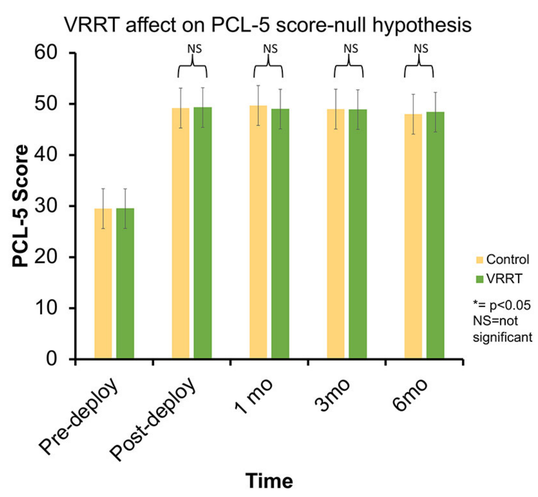
## Can biological factors and psychological interventions prevent PTSD?



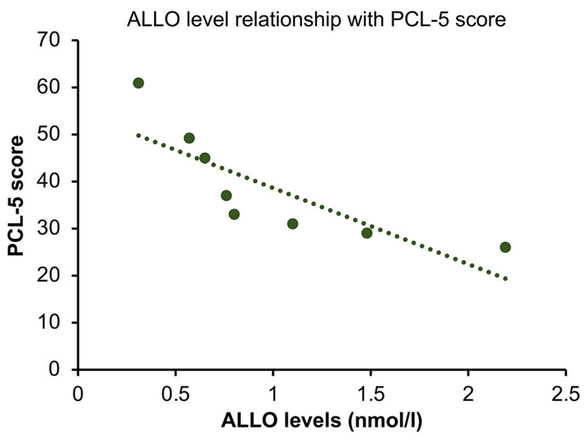

## VRRT is expected to prevent against PTSD symptom development



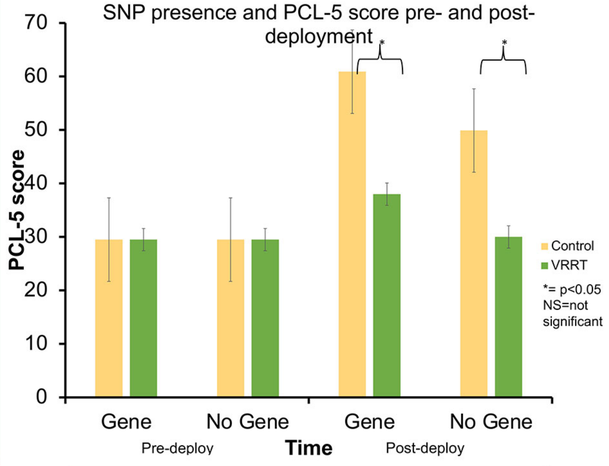

## If VRRT does not increase a soldier's resilience, we expect to find no significant difference in PCL-5 scores




## ALLO levels are expected to be negatively correlated with PCL-5 score

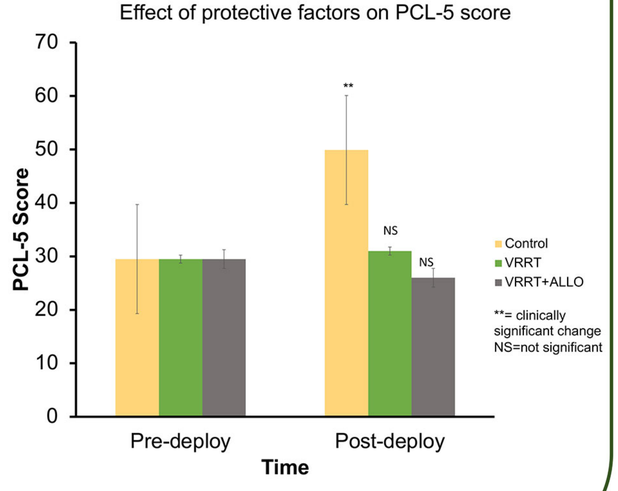



## The SNP rs717947 is expected to be associated with more severe PTSD symptoms




Presence of the SNP rs717947 is expected to be associated with more severe PTSD symptoms, however, VRRT is still expected to mitigate these symptoms.

## High ALLO levels combined with VRRT are expected to prevent PTSD symptoms




## Conclusion

In short, we expect that VRRT will mitigate PTSD symptom severity and lead to no change in PCL-5 score. High ALLO levels are expected to protect against PTSD vulnerability. Combined, these two factors are expected to prevent severe PTSD. The presence of the SNP rs717947 is expected to increase vulnerability to PTSD, leading to more severe cases of the disorder. **Overall, both biological factors and psychological interventions are expected to affect PTSD symptom severity.**