

# SCIENTIFIC REPORTS

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## **Author Correction:** Exercise – induced changes in cerebrospinal fluid miRNAs in Gulf War Illness, Chronic Fatigue Syndrome and sedentary control subjects

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Correction to: *Scientific Reports* <https://doi.org/10.1038/s41598-017-15383-9>, published online 10 November 2017

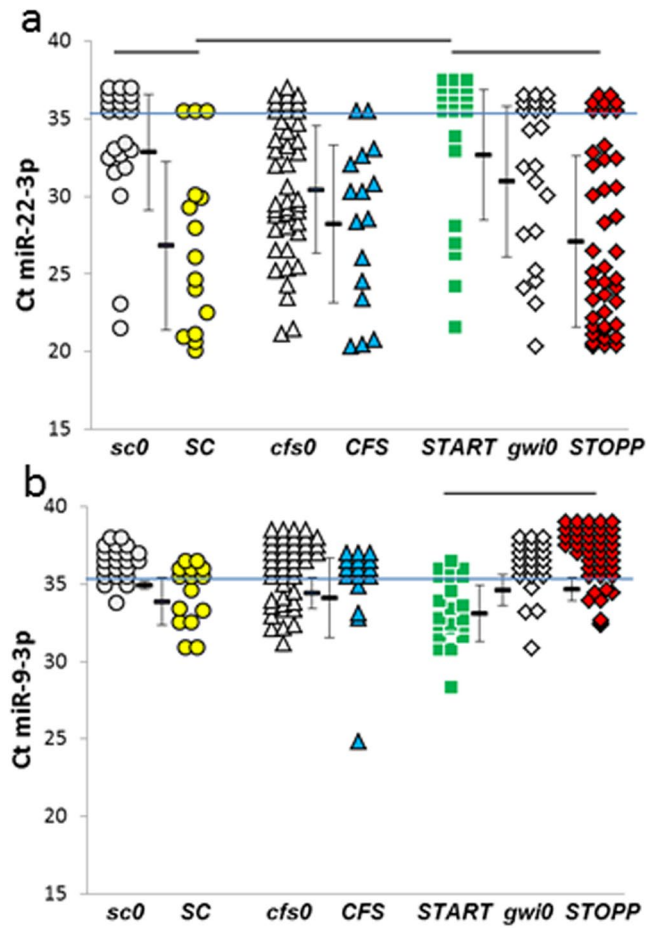
This Article contains a low resolution version of Figure 2. A higher resolution image appears below as Figure 1.

In addition, this Article contains an error in the order of the Figures. Figures 6, 7, 8, 9 and 10 were published as Figures 10, 6, 7, 8 and 9 respectively. The correct Figures 6, 7, 8, 9 and 10 appear below as Figures 2, 3, 4, 5 and 6 respectively. The Figure legends are correct.

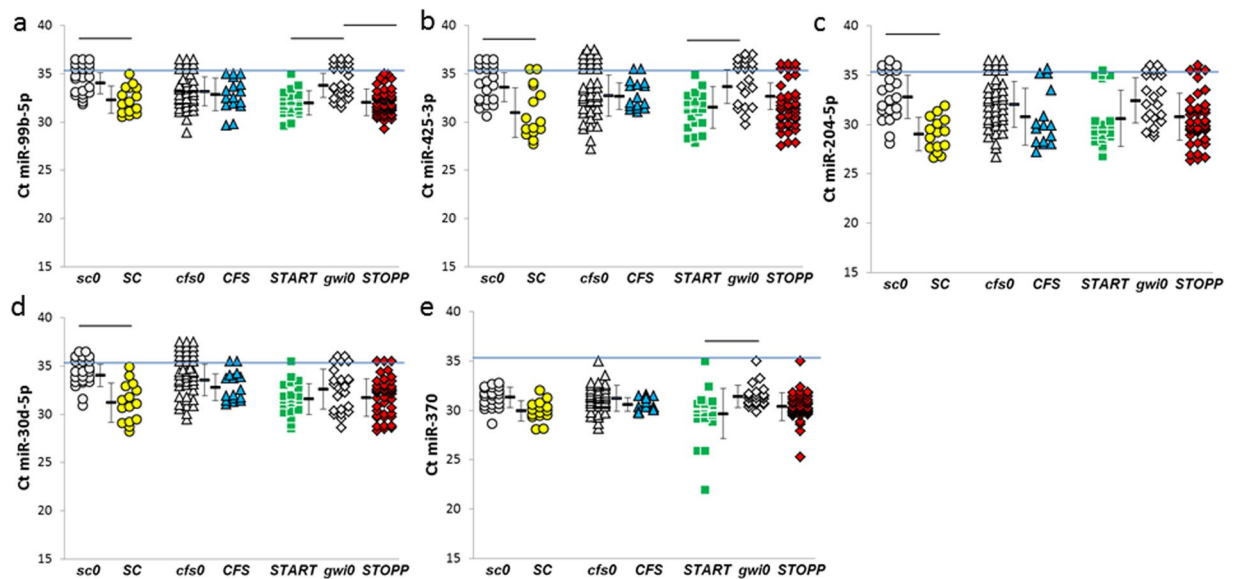
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Instructions: Score your symptoms based on the past 6 months. Write in the year when each symptom started or became bothersome to you (Onset). Mark the symptoms that began in theatre in the Persian Gulf in 1991 (Theatre). The numbers in parentheses give the odds for deployed GWI veterans to have each symptom compared to veterans who did not go to the Gulf.							
KANSAS CRITERIA for GWI	Severity of symptom in the past 6 months					Onset	
Systems and Symptoms	None	Trivial	Mild	Moderate	Severe	Year	Theatre
<input type="radio"/> <b>Fatigue/sleep problems</b>							
● Feeling unwell after exercise or exertion (4.28)	None	Trivial	Mild	Moderate	Severe		
● Fatigue (4.10)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple fatigue symptoms (3.32)	None	Trivial	Mild	Moderate	Severe		
● Problems falling or staying asleep (2.98)	None	Trivial	Mild	Moderate	Severe		
● Not feeling rested after sleep (2.69)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Pain symptoms</b>							
● Pain in muscles (4.57)	None	Trivial	Mild	Moderate	Severe		
● Body pain. Hurt all over (3.93)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple pain symptoms (3.57)	None	Trivial	Mild	Moderate	Severe		
● Pain in joints (3.27)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Neurologic / cognitive / mood symptoms</b>							
● Night sweats (5.33)	None	Trivial	Mild	Moderate	Severe		
● Feeling irritable or angry outbursts (5.18)	None	Trivial	Mild	Moderate	Severe		
● Problems remembering recent information (4.92)	None	Trivial	Mild	Moderate	Severe		
● Symptomatic response to chemicals, odors (4.62)	None	Trivial	Mild	Moderate	Severe		
● Difficulty concentrating (4.60)	None	Trivial	Mild	Moderate	Severe		
● Trouble finding words when speaking (4.20)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple neurologic symptoms (3.94)	None	Trivial	Mild	Moderate	Severe		
● Low tolerance for heat or cold (3.67)	None	Trivial	Mild	Moderate	Severe		
● Feeling dizzy, lightheaded, or faint (3.35)	None	Trivial	Mild	Moderate	Severe		
● Feeling down or depressed (2.99)	None	Trivial	Mild	Moderate	Severe		
● Headaches (2.96)	None	Trivial	Mild	Moderate	Severe		
● Eyes very sensitive to light (2.62)	None	Trivial	Mild	Moderate	Severe		
● Blurred or double vision (2.49)	None	Trivial	Mild	Moderate	Severe		
● Numbness or tingling in extremities (2.33)	None	Trivial	Mild	Moderate	Severe		
● Tremors or shaking (1.95)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Gastrointestinal symptoms</b>							
● Nausea or upset stomach (4.25)	None	Trivial	Mild	Moderate	Severe		
● Abdominal pain or cramping (4.23)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple gastrointestinal symptoms (3.6)	None	Trivial	Mild	Moderate	Severe		
● Diarrhea (3.38)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Respiratory symptoms</b>							
● Difficulty breathing or catching breath (4.09)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple respiratory symptoms (3.37)	None	Trivial	Mild	Moderate	Severe		
● Wheezing in chest (2.51)	None	Trivial	Mild	Moderate	Severe		
● Persistent cough when don't have cold (2.20)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Skin symptoms</b>							
● Rashes (5.73)	None	Trivial	Mild	Moderate	Severe		
● Moderate or multiple skin symptoms (4.09)	None	Trivial	Mild	Moderate	Severe		
<input type="radio"/> <b>Other symptoms</b>							
● Mouth sores (6.63)	None	Trivial	Mild	Moderate	Severe		
● Unusual hair loss (5.79)	None	Trivial	Mild	Moderate	Severe		
● Ringing in ears (4.06)	None	Trivial	Mild	Moderate	Severe		
● Self or partner has burning sensation after sex (3.75)	None	Trivial	Mild	Moderate	Severe		
● Hearing loss (3.34)	None	Trivial	Mild	Moderate	Severe		
● Sore or swollen glands in neck (2.94)	None	Trivial	Mild	Moderate	Severe		
● Sinus congestion (2.64)	None	Trivial	Mild	Moderate	Severe		
● Sore throat (2.39)	None	Trivial	Mild	Moderate	Severe		
● Problems with teeth or gums (2.04)	None	Trivial	Mild	Moderate	Severe		
<input type="checkbox"/> Gulf War Illness by "Kansas" criteria = moderate or multiple symptoms in $\geq 3$ of 7 categories						<input type="checkbox"/> Not GWI	
Steele L. Prevalence and patterns of Gulf War illness in Kansas veterans: association of symptoms with characteristics of person, place, and time of military service. Am J Epidemiol. 2000 Nov 15;152(10):992-1002. PubMed PMID: 11092441.							

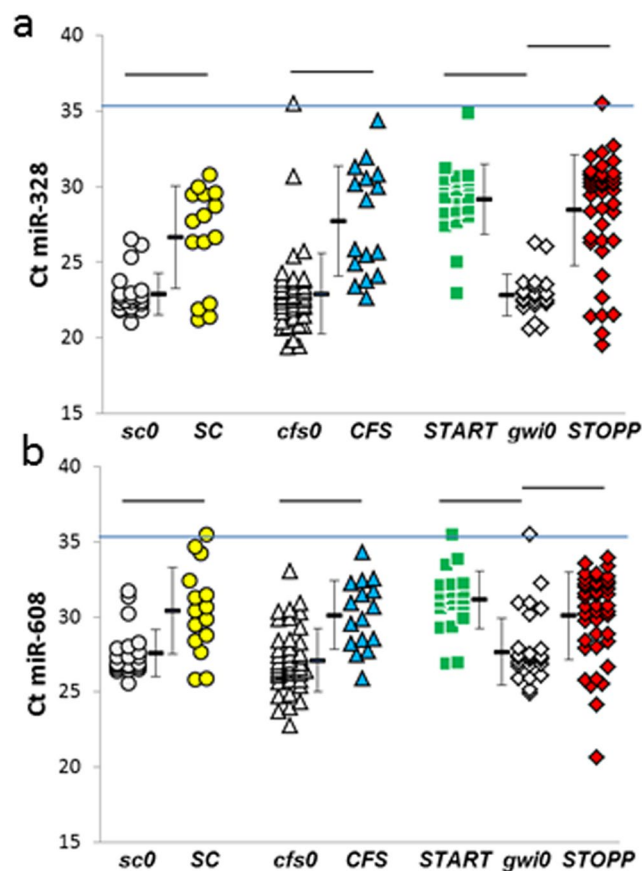
**Figure 1.** Kansas Criteria for Gulf War Illness scoring form based on Steele<sup>7</sup>. ©JNBaraniukMD\_17g13. Used with permission of the copyright holder.



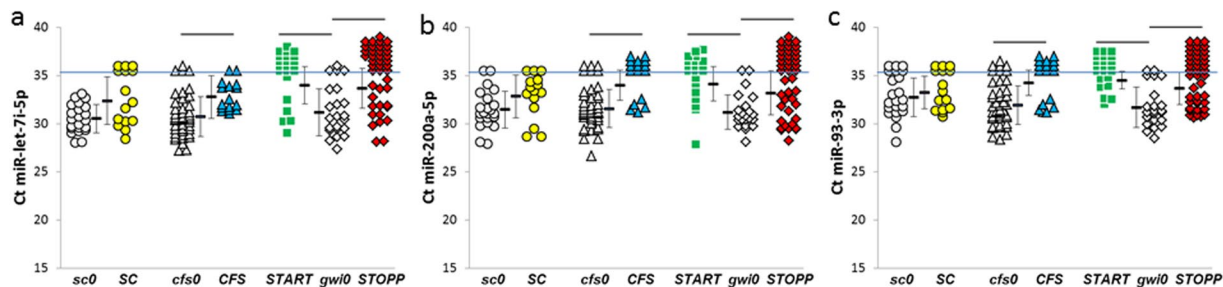
**Figure 2.** miRNA differences between post-exercise groups. (a) miR-22-3p was not detectable in most of the *START* subjects (green squares above the blue line at Ct = 35). *START* had significantly less miR-22-3p than *SC* (yellow circles) and *STOPP* (red diamonds) as indicated by bars over top of the groups (HSD < 0.05, FDR < 0.10). In addition, *SC* had significantly more miR-22-3p than *sc0* (grey circles). (b) miR-9-3p was detected in *START*, but was found in fewer than two thirds of subjects in the other groups. *START* had significantly more miRNA expression than *STOPP* ( $\Delta\Delta\text{Ct} = 1.6 \pm 1.4$ , mean  $\pm$  SD, HSD < 0.05, FDR < 0.10).



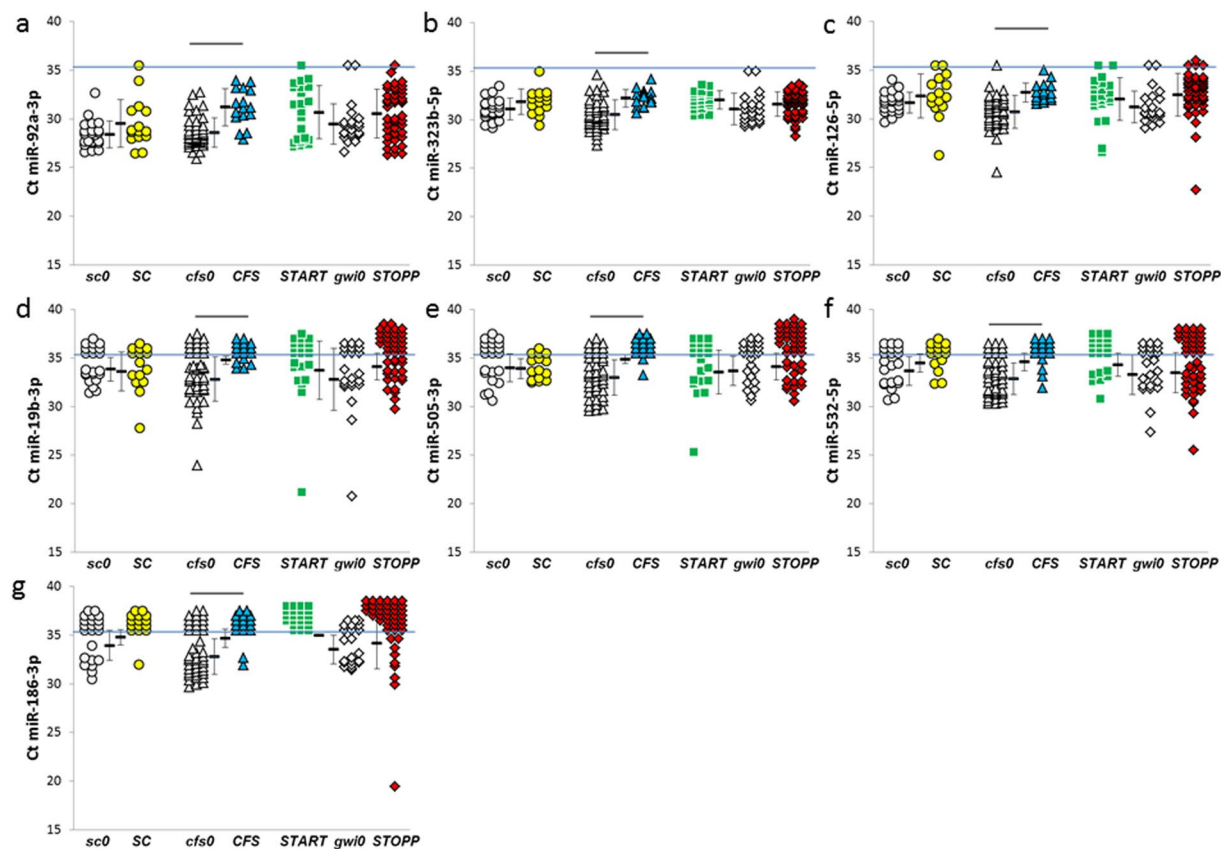
**Figure 3.** miRNAs that were significantly elevated in post-exercise compared to appropriate nonexercise control groups. Significant differences between groups were indicated by the bars at the top of the graphs for (a) miR-99b-5p, (b) miR-425-3p, (c) miR-204-5p, (d) miR-30d-5p, and (e) miR-370 (HSD  $\leq 0.05$ , FDR  $\leq 0.10$ , detected with Ct  $\leq 35$  in more than two thirds of one group per pair). The horizontal blue line indicated Ct = 35. Mean  $\pm$  SD.



**Figure 4.** Decreased (a) miR-328 and (b) miR-608 levels in SC, CFS, START and STOPP groups after exercise.



**Figure 5.** miRNAs reduced by exercise. GWI phenotypes (*START* and *STOPP*) and *CFS* all had reductions in (a) miR-let-7i-5p, (b) miR-200a-5p and (c) miR-93-3p. Sedentary controls had no changes.



**Figure 6.** Decreased miRNAs after exercise in *CFS* group. *CFS* had significant reductions in - (a) 92a-3p, (b) miR-323b-5p, (c) miR-126-5p, (d) miR-19b-3p, (e) miR-505-3p, (f) miR-532-5p, and (g) miR-186-3p, compared to its nonexercise *cfs0* comparison group (bars above the groups).



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