

Cancer Related Fatigue (CRF): Perception of effort or task failure?

Carlos Fernandez, MD. Shagufta Firdous, MD. Waqas Jehangir, MD. Bertrand Behm, MD.
Zankhana Mehta, MD. Andrea Berger, MAS. Mellar Davis, MD

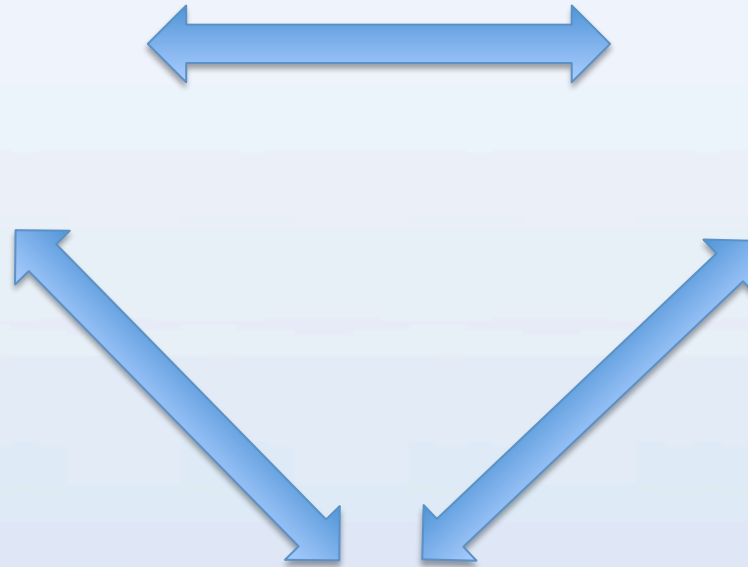
**Department of Palliative Medicine
Geisinger Medical Center**

Introduction

- Physiological fatigue: central and peripheral.
- CRF is believed to be of supraspinal origin.
- Finger Tapping test **FTT**.
- Rating of perceived effort **RPE** reflects the increased central drive to maintain a task.

Research Objectives

Brief Fatigue
inventory
BFI



RPE Borg 10

Methods

30 consecutive cancer patients



BFI



FTT protocol



15 s x 2
30 s x 2
60 s x 2
1 min of rest
between each
time trial



Borg 10 (RPE)

Exclusions:
brain mets, brain radiation,
Parkinson's disease,
Huntington's Chorea,
multiple sclerosis, delirium
and depression

Results

- 30 patients participated
- Mean age 56 (28 – 78)
- 16 females.
- Mean BFI score 4.1(0.3 – 8.1) Median 4.3 (0 – 8)
- Mean score for fatigue now 4.3, usual fatigue 4.2. worst 5.6
- Mean Borg scale was 2.6. Median 3. (0-7)

Donovan 2012, Morrow 2003

Change in tapping speed.

	Mean	SD
15 Second Tapping Speed/Second	4.4	1.1
30 Second Tapping Speed/Second	4.0	0.9
60 Second Tapping Speed/Second	3.7	0.8
Change in Speed from 15 to 30 Second Trials (30 second speed/sec - 15 second speed/sec)	-0.31 (0.38) p -value = 0.0001	
Change in Speed from 30 to 60 Second Trials (60 second speed/sec - 30 second speed/sec)	-0.38 (0.29) p -value < 0.0001	
Change in Speed from 15 to 60 Second Trials (60 second speed/sec - 15 second speed/sec)	-0.69 (0.50) p -value < 0.0001	

Tapping Speed and Fatigue Pearson's Correlation Coefficients	Overall Tapping Speed (total taps/total seconds)		Overall Tapping Speed (mean of trial taps/second)	
	ρ	p-value	ρ	p-value
BFI Mean Score	-0.075	0.6954	-0.082	0.6651
BFI Median Score	-0.078	0.6807	-0.085	0.6537
Fatigue Right Now	-0.191	0.3125	-0.194	0.3044
Fatigue Usual Level	-0.248	0.1870	-0.261	0.1643
Fatigue Worst Level	-0.189	0.3171	-0.206	0.2751
Borg 10	-0.230	0.2212	-0.247	0.1891
Age	-0.364	0.0477	-0.381	0.0380

Tapping Speed and Fatigue Pearson's Correlation Coefficients	Borg 10	
	ρ	p-value
BFI Mean Score	0.513	0.0038
BFI Median Score	0.541	0.0020
Fatigue Right Now	0.440	0.0151
Fatigue Usual Level	0.517	0.0034
Fatigue Worst Level	0.342	0.0646

Discussion

- Subjective Fatigue did not correlate with FTT but correlated with increased perception of effort.
- Increased RPE + Absence of task failure = Central Fatigue?
- CRF experience greater central fatigue.
- RPE: corollary discharges in cortical areas upstream of the primary motor cortex - independent from afferent feedback.

Conclusions

- This study supports the concept that CRF has an important central – supraspinal component.
- The use of RPE and its association with fatigue induced by FTT in cancer patients can be a reasonable outcome to measure in intervention trials.